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Why Has the British National Minimum Wage Had Little or No Impact on Employment?

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Abstract
A century has passed since the first call for a British national minimum wage (NMW). That remarkable Fabian tract discussed wage setting, coverage, monopsony, international labour standards, inspection and compliance and the interaction between the NMW and the social security system. The NMW was finally introduced in 1999. It has raised the real and relative pay of low wage workers, narrowed the gender pay gap and now covers around 1-worker-in-10. The consequences for employment have been extensively analysed using information on individuals, areas and firms. There is little or no evidence of any employment effects. The reasons for this include: an impact on hours rather than workers; employer wage setting and labour market frictions; offsets via the tax credit system; incomplete compliance; improvements in productivity; an increase in the relative price of minimum wage-produced consumer services; and a reduction in the relative profits of firms employing low paid workers.

Key words: national minimum wage, employment, compliance.
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"The effects of the minimum wage on employment and the distribution of income have been hotly debated policy question for over 50 years" (Brown 1999, p.2102).

1. Introduction

British workers were covered for the first time ever by a national minimum wage (NMW) for the last nine months of the twentieth century. In order to recommend the rate of NMW the Low Pay Commission (LPC) was established in 1997. The LPC is a form of social partnership with three employer representatives, three worker representatives and three independent members (Brown 2002, 2006). Its recommendations have always been unanimous and the government has always implemented the proposed NMW. Since its introduction in April 1999 the NMW has been uprated on seven occasions.

Two issues dominate any evaluation of the impact of the NMW. First, what has it done to pay? The dimensions of pay include money and real wage levels, wage inflation, pay differentials and wage inequality. Second, what has it done to employment? This paper sets out the evidence on these two subjects. The core of the paper is the explanation for the apparent lack of an impact on employment. Twelve possible explanations are examined. Interestingly, many of these were put forward a century ago.

It is a good time to undertake such an evaluation. Last year marked the centenary of the first thoroughly-argued call for a national minimum wage (Sanders 1906) in a short Fabian Society tract which anticipated almost all the current debates. It is salutary to realise how prescient the author and how controversial the issue. Next, the LPC is on record that: "Our aim is to have a minimum wage that helps as many low-paid workers as possible without any significant adverse impacts on inflation or employment" (LPC 2005). The last four upratings have been above the growth in the average earnings index so it is important to determine whether or not the stated purpose of the LPC has been achieved. Finally, the composition of the LPC will alter hugely in 2007 when six members leave, four of whom will have served all ten years since its establishment. Inevitably, this will lead to some changes in process and, probably, outcomes.

The remainder of the paper is as follows. Section 2 demonstrates that the NMW has affected pay, a precondition for also analysing its impact on employment. Sections 3 and 4 cover the theoretical predictions concerning employment, methods of investigation and evidence. It is shown in section 4 that employment effects appear small or non-existent; therefore section 5 presents an array of explanations for this finding. The current debate on the NMW is put in historical context in section 6 by examining the insights of those calling for a NMW one hundred years ago. Summary and conclusions are given in section 7. The interaction between the NMW and the distribution of household income is set out in the appendix.

2. Impact on Pay

The purpose of the NMW is to raise the pay of low-wage workers above what it otherwise would be. Therefore the first task is to set out just what the NMW has done to pay. If it has had no effect it cannot be held to influence employment. Our focus is on the adult NMW. Details concerning the lower youth rate for those aged 18-21 are set out in successive Low Pay Commission Reports (LPC 1998, 2001, 2003, 2005, 2007).

In April 1999 the inaugural NMW was £3.60. This rate covered some 1.2 million adult jobs i.e. 1.2 million jobs had to have their pay increased to comply with the NMW.[1] The average pay increase, April 1998 to April 1999, for workers in the bottom decile of the earnings distribution was around 10% or double the growth in median earnings over the same period (LPC 2000 figure 3.6). This improvement in relative pay was greater for part-time workers than full-timers (LPC 2001 table 3.2). Table 1 shows median hourly earnings in October 1998 and 1999 for those aged 22 plus who remained in the same job. Those earning less than £3.60 in 1998 saw a boost of 15.5% between 1998 and 1999, compared with a 4.6% hike for those earning above the minimum wage.

If we focus on a particularly low paid sector, care homes, between one third and two fifths of workers were previously paid below the NMW with a wage gap of 4% (the wage gap is the pay increase required to bring all employees up to the NMW as a percentage of the relevant wage bill). This suggests an average wage increase of over 10% for such workers consequent on the introduction of the NMW (see Dickens and Manning 2004, Machin and Wilson 2004). It is clear from both aggregate labour market data and from information for specific low paying sectors that the introduction of the NMW had a substantial impact on the earnings of those towards the bottom of the pay distribution in both absolute and relative terms.

Subsequent upratings of the NMW, and their impact on pay relativities, are set out in table 2. The NMW initially fell as a percentage of median hourly earnings from 47.6% in 1999 to 45.2% in 2001. Since then the NMW has been ratcheted up relative to the median, such that in 2007 it is around 52% of median pay.

Another way of looking at this is to compare the growth in the NMW with movements in earnings and prices (see table 3 and figure 1). In October 2006 the NMW is £5.35. If the initial rate of £3.60 had instead been indexed to earnings the October 2006 rate would be

[1] The coverage was in fact lower than the LPC initially anticipated (LPC 1998). This was the result of serious deficiencies in the data provided to the LPC by the Office for National Statistics (Metcalf 2003). These deficiencies have subsequently been rectified (see e.g. Ormerod 2006).

£4.88. And if it had been indexed to prices the corresponding NMW would have been between £4.02 and £4.34 depending on the price index used. Thus the NMW has increased substantially faster than both average earnings and prices, especially since 2002.

Increases in hourly earnings by percentile of the hourly earnings distribution are set out in figure 2. The data describe the increase in earnings minus the increase in median earnings by percentile. Between 1992 and 1997 when there were no wage floors, the earnings growth for those in the bottom quartile of the distribution was lower than the growth in median earnings. But in the subsequent eight-year period 1998–2006, covering the introduction and upratings of the NMW, the situation was completely reversed.

Between 1998 and 2006 the gender pay gap fell by over 5 percentage points (see table 2). For example, using median earnings the gender pay gap was 16.4% in 1998 and fell to 10.8% by 2006. It is plausible that the NMW made a significant contribution to this compression of the pay gap. Figure 3 plots the gap by percentile. The pay wedge between men and women narrowed much more at the bottom of the distribution than in the middle or top percentiles. As an aside, figure 3 suggests that those who aspire to narrow the gender pay gap still further should focus on the top half of the pay distribution rather than the bottom half.

What are the consequences of these movements in earnings for wage inequality? Dickens and Manning (2006) show, using both LFS and NES data, that wage inequality, measured by D50/D10, has fallen since 1998. They state (2004a, b) that the introduction and early upratings of the NMW had a modest effect on wage inequality, but after 2002 the effect became more pronounced. For example, they calculate that, because of the NMW, in 2005 the average log hourly wage was 2.7% higher than it otherwise would have been (a direct effect of 1.8% plus a spillover effect of 0.9%). Assuming that this effect is concentrated in the bottom quartile of the pay distribution (i.e. those above the lower quartile did not benefit from the NMW) the aggregate impact on the wage bill of the bottom quartile is 10.8%. Dickens and Manning state that the underlying wage distribution (i.e. except for the effect of the NMW) is unchanged since 1998. Therefore they attribute all the reduction in wage inequality since 1998 to the NMW.

This tempering of pay inequality is substantial. Wage inequality rose relentlessly from 1978 to 1996. The diminution in this inequality from 1997 to 2005 caused the 50/10 wage ratio in 2005 to be the same as it was in 1989, reversing around half the growth of the inequality which occurred between 1978 and 1996. And this occurred in the face of a huge, rapid alteration in the labour market working in the opposite direction (Dustmann et al. 2007). Immigrant workers as a percentage of native workers rose from 8.7% in

1999 to 11.5% in 2005. Each percentage point increase in this immigrant fraction is associated with a corresponding percentage point increase in the D50/D10 differential which would therefore, *cet par,* have risen by 3 percentage points 1999-2005.[2] Thus the NMW "performs an important role to secure wages of workers who otherwise would lose out from immigration" (p.45).

Fitzner (2006), a government economist, also confirms that "the minimum wage has not only significantly reduced the incidence of low pay, it has also helped contain wage inequality" (p.14). Likewise Lam et al. (2006), who work for ONS, write "the NMW does appear to be reducing inequality at the bottom of the wage distribution". This latter study concentrates on workers who remain in the same job in their firm and are paid at the NMW or up to £2 an hour above it, some 20,000 workers a year in ASHE. It finds that pay differentials remain broadly constant in cash terms when the NMW is uprated which implies a larger percentage rise in earnings for those at the NMW, hence the tempering of wage inequality.

The evidence reviewed in this section suggests: first, the introduction of the NMW raised the absolute and relative pay of those at the bottom of the distribution; second, subsequent upratings have boosted the NMW significantly more than the growth in the AEI, especially since 2002. The impact of the introduction of and upratings in the NMW on the number of workers covered is described in figure 4. We take the 1998 earnings distribution – the last year before the NMW and the year with the least state intervention in pay setting in the private sector in the whole twentieth century. The £3.60 rate covered 5.5% of jobs (1.172m). The October 2006 rate of £5.35 downrated to April 1999 by the AEI is £3.96. This covers 9.7% of jobs (2.097m).[3] Patently, the NMW has had a profound impact on the pay distribution. This is a precondition for analysing its effect on employment, to which we now turn.

[2] Dickens and Manning (2006) calculate, using both NES and LFS data, that the 50-10 differential fell around five percentage points 1999-2005. They attribute this to the NMW. Thus the true effect of the NMW is this 5 points plus the 3 point impact in the opposite direction as a consequence of immigration.

[3] It is not straightforward to calculate the number of workers "covered" by the NMW (see e.g. LPC 2006 chapter 2) i.e. the number who receive a wage rise because they are below the new NMW. My preferred method is to use the 1998 (pre-NMW) distribution and superimpose the NMW (suitably down rated) on that distribution. This method is likely to be problematic the further away we are from 1998 and if the underlying distribution of wages altered in the intervening period. Dickens and Manning (2006) state that the underlying distribution of wages did not alter between 1998 and 2005. Therefore use of the 1998 distribution to estimate coverage is entirely correct. This method has the further advantage that using just one pay distribution (1998) means that comparisons of coverage from one year to the next are not confused by the alterations in data caused as ONS sought to improve their initially defective data.

3. Employment: Theory and Methods of Investigation

> *"The most outrageous of these predictions are the attempts to show that, as wages are increased up to the minimum level, there will be an increase (or at least no decrease) in the number of jobs on offer at the higher wage. Now, this seems to be obvious nonsense"* (Walters 1998).

Our focus is the impact of a minimum wage on employment. We also briefly discuss the theory concerning hours of work and double-job holding. This theory section draws freely on Borjas (2000), Brown (1999) and Stewart and Swaffield (2004).

a. Standard economic model

The standard economic model relates to the demand side of the labour market (see e.g. Stigler 1946, Hamermesh 1993). If the minimum wage is set above the competitive wage employment falls back. The extent of this reduction depends on (i) by how much the minimum wage exceeds the competitive wage; and (ii) the elasticity of demand for labour. Marshall's (1901 pp.361, 362) famous rules of derived demand describe the factors that influence labour demand in a particular industry. Labour demand will be more elastic: the greater the elasticity of substitution e.g. of capital for labour; the greater the elasticity of demand for the output; the larger is labour's share in total costs[4]; the greater the supply elasticity of other factors of production such as capital. In the standard model the unemployment effect of a minimum wage is larger than the employment effect because (i) some previously employed workers lose their jobs (the employment effect); (ii) some workers who did not find it worthwhile to work at the competitive wage now wish to work at the minimum wage but cannot find a job. The unemployment effect – (i) plus (ii) – is larger the higher the minimum wage and the more elastic the labour supply and demand curves.

[4] Strictly Marshall's third rule only holds when the elasticity of product demand exceeds the elasticity of substitution. This is because the labour input can be sub-divided into ever smaller categories thus arbitrarily reducing labour costs in total costs for that category. As the labour input is redefined into ever smaller groups the elasticity of substitution among the smaller groups rises. The third rule therefore holds only when the elasticity of substitution is sufficiently small (i.e. the various labour inputs used by the firm are not essentially the same input broken up into arbitrary categories). This qualification was originally set out by Hicks (1932) appendix iii; for a simplified discussion see Borjas (2000 p.132).

b. Extensions or alternatives to the standard model

Coverage and compliance

The standard model assumes all workers are covered by the minimum wage and all firms comply with the minimum wage. In the UK the previous system of minimum wage protection (abolished in 1993) via the Wages Councils (see Metcalf 1981) did not cover all workers or even many low paid sectors like care homes and business services such as cleaning and security. But the NMW, introduced in 1999, provides near universal coverage (see section 5). This is an important consideration because any adverse employment effects of a minimum wage are likely to be tempered by less-than-universal coverage. As Brown (1999) puts it: "the uncovered sector may dilute but not eliminate the negative effects of the minimum wage on employment" (p.2104). The argument is, essentially, that any workers displaced by a minimum wage in the covered sector can migrate to the uncovered sector to find work, driving down the wage in the uncovered sector in the process.

Non-compliance is, *de facto*, equivalent to having an uncovered sector: workers are employed at a lower wage in the non-complying sector. Borjas suggests that in the US two fifths of workers who qualify for the minimum wage were paid less than that around year 2000. The empirical evidence concerning non-compliance in the UK is set out in section 5. Suffice it to say here that, while non-compliance is almost certainly growing, it is surprising that so many firms **do** observe the NMW. Compliance partly depends on: (i) the probability of being caught if you do not comply; (ii) the penalties suffered when you are so caught. In the UK both the likelihood of being caught and any consequent penalty are trivial.

Heterogeneous labour

The standard theory initially assumes homogenous labour but quickly recognises that workers are not perfect substitutes for one another: "Thus, it makes sense to focus on the analysis of low wage groups, where the proportion directly affected is larger and so the anticipated effect on group employment is likely to be larger" (Brown 1999, p.2107). Because workers are heterogeneous wage structures and differentials matter and the firm may, for example, substitute more skilled labour for less skilled labour in the face of an increase in the minimum wage. Essentially Brown is cautioning against trying to analyse the employment effects of the MW by using time series data on aggregate employment because the NMW only affects a small share of total employment and is therefore "likely to be small and in any case swamped by other factors". Instead the focus should be on

low paid individuals and low paying sectors. This is precisely the core of British empirical work discussed below.

Monopsony: traditional version

Brown (1999, p.2108) states "Although they are not, in the end, intended to believe it, undergraduate students are exposed to the possibility that a "skilfully set" minimum wage increases employment under monopsony". This possibility was first noted by Stigler (1946). The key point is that the monopsonist faces an upward sloping labour supply curve. The profit maximising equilibrium is where the marginal cost of labour equals the marginal revenue product (demand for labour curve). This yields wage and employment levels below their competitive counterparts. As long as the minimum wage is set between the monopsonistic and competitive wage both employment and pay will increase. The minimum wage acts as a floor and prevents a profit-maximising monopsonist reducing the quantity of labour employed and cutting the wage as much as it would like to.

How much the wage can be raised under monopsony before employment starts to fall again therefore depends on the elasticity of labour supply. The more inelastic the labour supply the greater the scope for raising the wage. Standard analysis uses a one-company town, perhaps a mining company. Frankly, this does not describe the market for low paid jobs in the UK (see LPC 2005). The main low-paying sectors include retail, hospitality, cleaning, security, hairdressing and agriculture all of which have many employers so that the elasticity of labour supply to any one employer should be close to infinite, and the opening for a skilfully set minimum wage negligible. Further the competitive wage varies among employers while the minimum wage is uniform, which makes it less likely that most employers affected by the NMW will be in the employment-enhancing range.

Monopsony: modern

Although the notion of monopsony described by a company town is at odds with the operation of the low paid labour market there are other reasons why the labour supply curve facing firms which employ low paid workers may be upward sloping. Bhaskar et al. (2002) and Manning (2003) describe such a situation as an oligopsony or monopsonistic competition in the labour market such that a degree of labour market power co-exists with competition among employers. There are three main sources of

such market power, frictions,[5] resulting in a less than perfectly elastic labour supply curve. First, the absence of perfect information on possible alternative jobs. If workers must search for new jobs, a cut in pay will not result immediately in all workers quitting. Marshall (1901) knew this perfectly well: "it would be altogether unreasonable to make this assumption [perfect knowledge] when we are examining the causes that govern the supply of labour in any of the lower grades of industry. For if a man had sufficient ability to know everything about the market for his labour, he would have too much to remain long in a low grade" (p.256). Second, the costs of moving between employers. Third, workers having heterogeneous preferences for different jobs. Although a worker might have identical productivity in two different jobs s/he prefers the type of work – job specification – or working conditions – e.g. hours, distance from home to work, social environment at the workplace – in one job over another. Jobs which match the needs of child care for a mother with nursery/primary school-age children might be a typical example of such a preference. Or a teenager might prefer a Saturday job at Marks & Spencer because her friends also work there. The key point is that a worker in a preferred job may not immediately choose to leave an employer that slightly reduces its wage rate.

In an oligopsonistic labour market, where multiple employers compete with one another for workers, a minimum wage has two conflicting effects. First, a minimum wage set moderately above the market wage will cause establishment-level employment to increase because, if all employers offer higher pay (to comply with the minimum wage), the labour market participation rate also rises: "Intuitively, by setting the minimum wage above the market wage employers find it easier to fill their vacancies" (Bhaskar et al. 2002, p.168). Second, a binding minimum wage decreases employers' profits, and with free entry into and exit from the labour market some employers will be forced to go out of business and exit. The jobs in such firms are lost. Thus, minimum wages have two opposing effects: "the employment-increasing "oligopsony" effect and the employment-reducing "exit" effect. The overall effect of a minimum wage depends on which effect dominates" (Bhaskar et al. 2002 p.169). The general conclusion is that a minimum wage set moderately above the market wage "may have a positive effect or negative effect on employment, but the size of this effect will generally be small because of the two countervailing forces" (p.169).

[5] Matching models (see Mortensen and Pissarides 1999) also start from the premise that important frictions exist in labour markets. But they differ from monopsony models in the assumptions made about wage determination (see Manning 2003, section 1.3 for full details).

Efficiency wages

Effort need not be constant and this has (different) implications for employment. Brown (1999 p.2110) suggests that if employers respond to the minimum wage "by raising the effort standard they require on the job, employment effects may be magnified rather than mitigated". If a 10% increase in the minimum wage is offset by a 10% increase in enforced effort, employment in efficiency units is not changed but employment of workers or hours worked would be cut by 10%. Manning (1995) presents an alternative model in which the marginal revenue product of labour shifts outwards as a consequence of the extra effort, thus accommodating the higher wage thereby leaving employment constant or even higher. This is simply a modern version of the old "economy of high wages" argument (Pigou 1920) where higher wages permit better nutrition and hence higher productivity in jobs requiring physical strength. So, again, we have two different possible employment effects under the efficiency wage arguments, which confirms that economic theory does not provide an unambiguous prediction concerning the employment impact of the NMW.

Offsets

Pay is the most important part of the cost of low paid labour but often not the only component. Just as legislated improvements in the non-wage aspects of the job – for example health insurance, safety or employer provided training – may lead to lower wages, so the employer may offset some of the cost of a minimum wage by cuts elsewhere. This will limit the employment loss.

Summary

In the standard text book model a MW reduces employment, although any such reduction will tend to be attenuated by lower coverage or compliance and various available offsets. But traditional monopsony models and modern versions such as oligopsony suggest employment might rise with a minimum wage. The key feature of both traditional and modern monopsony models is the emphasis on the supply side of the labour market i.e. vacancies previously unfilled now get filled because some workers who would not work at the previous wage will do at the minimum wage. Therefore as Manning (2003) observes "the impact of minimum wages on employment should primarily be an empirical issue".

c. Hours of work and double-job holding

The standard textbook model suggests that employment will tend to fall when the minimum wage is set above the competitive wage. Such a reduction can be achieved along either or both the **extensive** margin – workers – or **intensive** margin – hours. Hamermesh (1993 p.294) states that in the short run "employers are quicker to alter hours in response to shocks than they are to change levels of employment". There are a number of reasons why we might expect firms with a high proportion of low paid workers to cut hours. For example if fixed costs per worker are high the employer will tend to cut the number of workers and lengthen the workweek for those that remain. In the event, the fixed costs of low paid workers are relatively low: they are low skilled, have little on-the-job training and high labour turnover. So hours are more likely to fall than rise. Next consider the technology employed by minimum wage-type firms. Hospitality, retail, care homes, cleaning etc all tend to have lower capital : labour ratios than the average UK firm. Further, the possibility of substituting capital for labour is limited. And there is already a high incidence of part-time work. Each of these technology parameters points to a cut in hours rather than an increase. Further, UK labour law - rules concerning redundancy and unfair dismissal for example – constrains firms which desire to adjust employment downwards (OECD 2006). Therefore any initial adjustment may come along the intensive rather than extensive margin.

One counter argument points to longer hours. Full-time workers are paid (per hour) more than equivalent part-time employees. This implies that full-time workers are more productive. If so, firms might be expected to lengthen the work week in response to a minimum wage rather than reducing hours.

Second-job holding provides, in principle, a focus on adjustment in labour supply. Presumably workers normally take second jobs because the income generated by the hours/wage combination in the first job is insufficient. So the imposition of a minimum wage will tend to reduce the supply of individuals willing to take second jobs (Robinson and Wadsworth 2005). In the presence of hours constraints, the effect of a minimum wage is to raise the offered wage closer to the desired wage, with the hours constrained in the first job restricting the substitution effect so that the income effect dominates. This could reduce the incidence of second jobs among low paid workers relative to others.

d. Methods of investigation

Associations between the introduction and uprating of the NMW and employment have been investigated using a number of different methods including analysis of: aggregate

employment and the shares of employment by sector or age; individual employment probabilities; variations in changes in employment across geographic areas; and detailed case studies and surveys across firms in sectors like care homes which have a high incidence of low paid workers.

Aggregate employment and shares by sector and age

A useful initial overview of the impact of the NMW details aggregate employment and unemployment before and after the introduction or uprating of the NMW. The graph can be plotted to examine any sharp movements in this aggregate data around the time of the introduction or upratings. A slightly more sophisticated extension concerns sector or age employment shares. Time series evidence on the share of employment of low paying sectors – including retail, hospitality, cleaning and security, textiles, social care, hairdressing and agriculture – can be studied to see if there are any noticeable alterations in such shares associated with the NMW. Such graphs – while remarkably useful – only get you so far. They do not show what would have happened to aggregate employment or sector shares but for the NMW. For example, even if the share of employment in the hospitality sector remains constant we cannot conclude the NMW had no impact: perhaps its share would have risen but for the NMW.

Individuals: difference-in-difference

Individual-level longitudinal data from a number of sources has been used to estimate the impact of the introduction, and subsequent uprating, of the NMW on the probability of remaining in employment and on hours worked. Stewart (2002) notes that the idea at the core of this method "is an intuitively obvious one: other things being equal, the largest effect of the introduction (or uprating) of the minimum wage on employment will be found where it has its largest effect on wages" (p.584). The method compares low wage workers whose pay would have to be raised to comply with the NMW with a similar group of workers not directly affected. The individual's employment to unemployment transition probability is estimated as a function of the individual's initial position in the wage distribution.

This approach is known as "quasi-experimental" and uses the difference-in-difference technique. The first difference is between the two groups – the treatment group whose wage was raised to comply with the NMW and the control group of similar workers whose wage was just above the NMW. The second difference is the change in individual employment probabilities before and after the introduction or uprating of the NMW. Thus the difference between the two groups in a period affected by the NMW can be

contrasted with the corresponding difference in an earlier period when no NMW was in place. Stewart (2004a) summarises the approach: "The question addressed is whether an individual whose wage would have to be increased to comply with the new minimum has a higher probability of losing their job than a **comparable** person in the wage group just above the new NMW". Three longitudinal data sources have been used in these analyses of individual workers – Labour Force Survey (LFS), British Household Panel Survey (BHPS) and New Earnings Survey (NES) now retitled the Annual Survey of Hours and Earnings (ASHE). The pros and cons of each source are fully set out in Stewart (2004a).

Results concerning the impact of the NMW using the difference-in-difference technique will be contaminated if: (i) compliance with the NMW is seriously incomplete; (ii) the NMW has wage spillover effects further up the pay distribution. There is a suggestion of growing non-compliance, particularly among firms employing immigrants (see section 5). But this is unlikely to debase the evidence in section 4 because such workers mostly do not appear in the LFS, BHPS or NES. Similarly, there is no strong evidence of wage spillovers further up the earnings distribution either when the NMW was introduced in 1999 or uprated 2000-02 (see e.g. LPC 2000, 2001; Dickens and Manning 2004a, 2004b; Dickens and Draca 2005). But there is evidence of such spillovers from the 2003 uprating onwards (see e.g. Butcher 2005 and Dickens and Manning 2006). Therefore the extant evidence (tables 5 and 6) covering 1999-2002 is probably free of contamination. But any difference-in-difference studies of the upratings from 2003 onwards may well be degraded by these wage spillovers. This is a nuisance because, during 2003-06, the NMW was increased by more than the growth in the AEI on four occasions – the very period when analysis of the employment effects is vital for any evaluation of the impact of the NMW. It should be noted that if employment effects are found in the face of such spillovers this is a strong result – the spillovers reduce the chance of finding an employment effect.

The difference-in-difference technique can be adapted to distinguish between workers whose wage needed to be raised a lot and those for whom only a small increase was required. This method is called the wage-gap. It has the advantage that it permits the elasticity of employment with respect to the wage to be calculated.

Employment changes by geographic area

There is considerable variation in pay across geographic areas in the UK. Therefore the introduction of the **national** MW affected the wage distribution much more in some areas than in others. In Northumberland and Lincolnshire a much higher fraction of employees needed their wage to rise to comply with the NMW than in Surrey or Berkshire. Card

(1992) notes that: "from an evaluation perspective, a uniform minimum wage is an underappreciated asset". Stewart has exploited this uniform MW coupled with geographic wage variation: "On the basis of the standard textbook model of the labour market, we would expect to see a relative decline in employment in low-wage areas where the minimum bit more deeply compared to higher wage areas where relatively few employees' wages were affected" (2002, p.584).

There are two types of estimate. First, a regression relationship between the change in the employment rate for the period just before and just after the introduction of the NMW and the fraction of workers in an area initially below the minimum wage. Second, the difference-in-difference estimator based on comparing groups of low-wage and high-wage areas of the country. These two estimators can be calculated for both data aggregated to the area level and individual-level data.

Employment changes across firms

Employment change across workplaces and firms has been studied both by industrial relations scholars and economists. The nationally representative 1998 Workplace Employment Relations Survey (WERS) collected information for some 2000 workplaces on the proportion of the workforce earning below £3.50. The 1998-2004 panel can be used to calculate the subsequent employment change to examine whether or not employment grew/fell relatively in those workplaces with a high initial fraction of low paid individuals.

The most detailed sector study is of care homes. Data was collected for over 600 homes before and after the introduction of the NMW with a smaller sample studied for a subsequent uprating. The impact of the NMW on three employment variables was analysed: the probability of the home closing; the change in employment; and the change in hours. The wage variables were the percentage of employees in the home initially below the NMW and the wage gap – the fraction of the wage bill of the home required to bring workers up to the NMW. A cross section regression of employment on pay, with controls, provided the evidence on the sensitivity of employment.

Industrial relations research is different in that typically a few firms or organisations are studied intensively. The focus is often on whether firms take a strategic view of how to cope with the NMW or a reactive, muddling-through, approach (e.g. Adam-Smith et al. 2003). A strategic approach includes deliberate cost minimisation via intensification of work. Alternatively the firm may move up-market by investing in training and upgrading the skill content of jobs to produce higher value added goods and services. The reactive

policy accommodates the NMW because wages are set "within a range of indeterminacy" and informality and managerial prerogative are the order of the day in many low paying firms.

4. Employment: Evidence[6]

a. Aggregate employment and sector and age shares

Aggregate UK employment has risen consistently since 1993 and, similarly, aggregate unemployment fell during that time up to mid-2005. There is no evidence that the introduction of the NMW influenced these trends in aggregate employment and unemployment.

But the NMW obviously affects low paying sectors more than other sectors. Therefore table 4 sets out details of employment in GB as a whole and in eight low paying sectors: retail; hospitality; social care; cleaning; agriculture; security; textiles, clothing and footwear; and hairdressing. The data refer to employee jobs and are collected from employers' records. Between March 1999, just prior to the introduction of the NMW, and March 2006 total employment in these eight sectors rose from 6.3m to 6.7m and their share of total employment remained virtually unchanged at near 26%. The only really noticeable change in any employment share occurred in textiles, clothing and footwear reflecting, not the NMW, but the long term decline of this sector going back decades. At the time the NMW was introduced there was no MW for 16-17 year olds, but 18-21 year olds were covered (at a rate with a stronger bite than the adult rate). Therefore, in theory, we might expect some substitution between the two groups. In the event between spring 1999 and spring 2000 the employment share of 16-17 year olds fell, while that of 18-21 year olds increased.

This evidence on aggregate employment, sector shares and age shares does not suggest any NMW effect because aggregate employment continued to grow and the sector shares remained similar. But such information does not indicate what would have happened to employment but for the NMW so we now examine employment changes across individuals, areas and firms which does provide such evidence.

[6] The focus is the employment effects of the national minimum wage. Evidence on the corresponding employment effects of the Wages Councils is fully set out in Fernie and Metcalf (1996) and LPC (1998, appendix 11).

b. Individuals

Introduction of NMW

Evidence on the employment effects of the introduction of the NMW in 1999 is set out in table 5. The most thorough study is Stewart (2004a) which uses: all three data sources; both difference-in-difference and wage gap models; various measures of the wage; an array of variables to control for differences in employment probabilities caused by factors other than the NMW; and many alternative variable definitions, samples etc. Stewart's summary is unambiguous: "The estimated impact of the introduction of the minimum wage on the probability of remaining in employment is insignificantly different from zero for all four demographic groups (male, female adults and youths) and all three datasets" (p.96). The implied elasticities of employment with respect to the wage are tiny, all non-significant, and mostly positive. Stewart concludes that the evidence indicates: "no significant adverse employment effects of the introduction of the UK minimum wage in any of the four demographic groups considered or in any of the three datasets examined" (p.96).

Total employment consists of the number of employees multiplied by hours of work. Employment can be adjusted along the extensive margin – the number of employees – or the intensive margin – hours worked per employee. The evidence above suggest no adjustments occurred consequent on the introduction of the NMW along the extensive margin. What of adjustments in hours – the intensive margin?

Stewart and Swaffield (2002) analysed the hours of over 4500 workers aged 18-60/65 from the 1999 BHPS. Their focus was the group (4.6%) whose pay was increased to bring them up to the NMW. The vast majority of these workers did not have their basic hours changed but around 1-in-10 reported that their hours were reduced as a direct consequence of the NMW. The authors conclude that "employees who had their pay increased due to the NMW have a higher probability [than workers whose pay was unaffected] of having reductions in their basic hours as a direct result of the introduction of the NMW". This conclusion is reinforced in their 2004 study which uses the difference-in-difference method and many observations on individuals from both NES and LFS to analyse changes in hours. They study adjustments in both basic and total hours. For those initially paid below the NMW compared with the control group they report, essentially, that the NMW led to a cut in hours, both basic and total, of between 1-2 per week. LFS data suggest that the impact was higher for men than for women. They conclude that the NMW "led to a reduction in paid working hours of both male and female low wage workers".

Connolly and Gregory (2002) analyse the consequences of the introduction of the NMW for average weekly hours worked by women aged 22-59. Women, especially those working part-time, were the main beneficiaries of the NMW (LPC 1999, 2000). In contrast to Stewart and Swaffield (2004) they: "find no evidence that hours worked amongst sub-minimum wage workers have changed significantly differently from those in the comparator group whose pay was unaffected; even where the change appears negatively signed it is not significant" (p.629). However, it should be noted that when they take a 3-year period after the introduction of the NMW the negative effect of the NMW on hours of the treatment group is larger than it is after just 1 year, albeit still not statistically significant. This suggests, consistent with Stewart and Swaffield, that any adjustment in hours – consequent on the NMW – takes some time to be implemented. But the further away we get from the introduction of the NMW, the more difficult it is to track any effects of its introduction because there are so many other intervening factors.

Around 4% of employees have second jobs. The incidence of second job holding is higher the lower the hourly wage in the main job. Robinson and Wadsworth (2005) analyse whether the introduction of the NMW affected this incidence of second jobs. The authors draw on the results of Stewart (2004a) – no apparent employment affects of the NMW – to argue that the supply of jobs was not affected by the introduction of the NMW and, therefore, any change in the probability of second job holding represents a labour supply effect. As shown in the theory section, the expectation is for a disproportionate lowering of the incidence of second job holding for those initially below the NMW. In the event there was no significant effect on the change in the probability of second job holding for those initially below the NMW as compared with a control group a little above the NMW. There was also no apparent impact on hours of work in either the second or main job.

Uprating of NMW

The employment effects on individuals of uprating the NMW are set out in table 6. Stewart (2004b) finds that for the 2000 and 2001 upratings : "the difference-in-difference estimates are insignificant for both upratings and all demographic groups. . . . . the majority are positive. . . . . No significant adverse effect is found for the upratings for any of the demographic groups considered" (pp c115, c116). Dickens and Draca (2005) study the 2003 uprating. Their analysis extends the Stewart study of the 2000 and 2001 upratings in two ways. First it uses actual, rather than derived, hourly pay (actual is not reported for the whole LFS sample). Second evidence on inflows to employment (as well as the normal outflows) is set out. Virtually all their results are not statistically significant. They find a slight (ns) reduction in the employment retention probabilities

for the adult treatment group (from 93% to 91%) but no differences in job inflow rates. The study concludes that there is: "no clear statistically significant evidence of employment losses, measured either in terms of employment outflows or inflows".

ASHE data is used ingeniously by Jones et al. (2006). They separate the ASHE sample, some 135000 workers, into the low paid – defined as at or below the NMW – and those not low paid. They then calculate the annual transition matrix with three outcomes: not low paid, low paid, exit from the sample. The matrices are presented for all 6 years 1999-2000 to 2004-2005. Exits from ASHE are presumably mainly into unemployment but also include job changes not yet traced by the survey, moved abroad, incapacity, retirement and death. Such exits have risen monotonically for both the low paid and not low paid groups and are absolutely higher for the low paid than the higher paid group. But what is noticeable is that the **increase** in the exit rate is much lower for the low paid group than for the high paid. This is the reverse of what would happen if the NMW had adverse employment effects.

c. Geographic area variation in pay

The wage distribution in areas with a relatively high fraction of workers ("high impact") paid below the NMW was, not surprisingly, more affected than the corresponding distribution in higher wage areas ("low impact"). Stewart (2002) uses this impact on pay by area to study its association with employment changes (see table 5). Evidence is first set out for the period straddling the introduction of the NMW. The unit of observation is 140 areas. The evidence is cross sectional and uses two methods of investigation: (a) the regression relationship between the change in employment and the fraction of workers initially below the NMW; (b) difference-in-difference employment rates between high impact and low impact areas. The conclusion is stark: "there is no evidence of the introduction of the minimum wage reducing employment" (p.596). Next, evidence is presented using panel data for the period before the introduction of the NMW (1996-98) and afterwards (1998-2000) using data on comparing individuals who work in high impact areas compared with low impact areas. For the sample as a whole all estimates are non-significant. More importantly when the sample is restricted to those most at risk – e.g. women, unskilled, those in their job for under 12 months, in low paying industries – "all estimates are insignificant and the great majority of them are positive" (p.602). Stewart concludes that his findings "are consistent with the view that the minimum wage's introduction had no systematic adverse effect on employment" (p.603).

Employment creation or destruction across 459 Census areas was also studied by Galindo-Rueda and Pereira (2004) for eight separate low paying sectors: cleaning, hairdressing, hospitality, retail, leisure, security, social services, and textiles over years 1997-2001. Their two employment indicators were net creation of establishments and aggregate employment. Both these measures of employment increased in all sectors except textiles. But in areas where the NMW bit harder – a relatively high initial fraction of workers below the NMW – the net growth in establishments or in employment was modestly below that in areas where the bite of the NMW was softer. Thus it is possible that employment growth in these sector/area cells was a little lower than it would have been in the absence of the NMW. It should be noted, however, that a parallel investigation by the authors using matched information from the NES and the Annual Business Inquiry concluded: "we fail to find evidence of a significant employment effect" (p.32).

Retail and hospitality are the sectors with the largest absolute number of low paid workers. Experian (2006) examined the association between the bite of the NMW by region and employment changes by region for these two sectors over the period 1995-2004. There was no association for retail. For hospitality there was a significant negative association but the elasticity of employment wrt the wage is tiny – a doubling of the wage bill resulting in just a 4% drop in employment. This small negative link was entirely driven by the substantial (7.5% pa) 2003 and 2004 upratings. Experian also found a negative association between new VAT registrations and the bite of the NMW by region in distribution and hospitality, but again the NMW effect was very modest – a doubling of the wage bill leading to an approximate 1% reduction in new VAT registrations.

d. Employment changes across firms

Employment changes across firms have been analysed for the UK as a whole and for specific sectors like care homes, hospitality and clothing.

The Workplace Employment Relations Survey is a representative sample of some 2000 British workplaces (Kersley et al. 2004). In 1998 – the year prior to the introduction of the NMW – it asked the percentage of employees in the workplace paid less than £3.50 an hour (a neat anticipation of the £3.60 rate a year later!) The panel of workplaces also in the next 2004 survey totals 1519, with 1126 in the private sector. Table 7 cross tabulates the employment change between 1998 and 2004 against the percentage of the

1998 workforce paid below £3.50[7] (remember, no cross tabulation from WERS has ever been overturned by a regression analysis). Compare the workplaces with a quarter or more of their workforce earning below £3.50 an hour in 1998 with the total sample. The closure rate between 1998 and 2004 was virtually identical at 21%. The low paying workplaces were less likely to experience a fall in employment above 25% than the sample as a whole, and they were more likely to boost their employment by above 25%. All in all there is no evidence of any NMW employment effects 1998-2004 in the WERS sample.

The UK has a full representative private sector dataset called FAME – Financial Analysis Made Easy. Draca et al. (2005) use this to analyse closure rates, profits and productivity among around 1000 firms which pay below the median wage. They use a difference-in-difference approach (average annual wage below £12000 or between £12000 and the median of £20000) but find no correlation between the introduction of the NMW and probability of closure. Rather, they state that the profit margin fell by between 8 to 11% in firms affected by the NMW (see section 5).

The care home sector is particularly interesting to study (see Dickens and Manning 2003, Machin et al. 2003 and Machin and Wilson 2004). Their analyses covered some 600 care homes. Just prior to the introduction of the NMW 32% of employees in the representative sample were paid below the NMW. Just after its introduction 28% received exactly the NMW. So the NMW had a huge impact on the pay distribution in this sector resulting in a sharp fall in wage dispersion. The probability of closure was documented over a three and a half year period 1998-2001. Overall 23% of homes closed (7% pa), not a high figure for a low wage, high turnover, small firm sector. But there was no association between the probability of closure and either the fraction initially paid less than the NMW or the wage gap. However, there is evidence that those firms affected by the NMW were likely to suffer relative employment falls: a 10% increase in the proportion initially paid below the NMW (say from 30% to 33%) was associated with 1.3% lower employment growth. And a 10% higher wage gap (say from 4% to 4.4%) was associated with 2.9% lower employment growth. Machin and Wilson state that overall employment in the care home sector was growing at this time and what may have been happening was a reallocation of labour away from low wage homes towards those with higher pay. However, it should be noted that there is also evidence of a negative affect on hours.

[7] I am grateful to Mark Williams for producing this cross tabulation for me.

Dickens and Manning (2003) commenting on the introduction of the NMW in this sector state that it had a "small negative impact on employment". They point out that such a result is unlikely to be generalisable to other sectors. Care homes had "the lowest wages in the UK and [it] is where the impact of the NMW has been largest. Also, it is an unusual sector in that firms are restricted from passing higher costs onto higher prices since prices are largely set by local authorities [see e.g. the complaint of the Independent Health and Care Providers 2006]. Both of these factors mean that if we are going to find job losses anywhere we would expect them in this sector" (p.209). Even so, when Machin and Wilson (2004) studied the 2001 uprating in the NMW for a sub-sample of 180 care homes on the south coast (see table 6) they found no significant evidence of any employment effects associated with this uprating.

Case studies of one or a few firms exist for most of the low paid sectors. Examples include hospitality (Adam-Smith et al. 2003), textiles (Heyes and Gray 2001a), hairdressing (Drucker et al. 2005), apparel (Undy et al. 2001) and Asian home workers in the clothing industry (Heyes and Gray 2001b). A survey of the findings concerning jobs from such case studies (Mason et al. 2006) "found no evidence of systematic adverse effects" (p.103). This is consistent with the findings from the two major surveys of how firms in low paying sectors adjusted to the introduction (Grimshaw and Carroll 2002) and uprating (Cronin and Thewlis 2004) of the NMW. The former reports for example "very little evidence of an adverse impact of the NMW on employment" (p.vii) and the latter could only find ten firms out of the 4000 initially surveyed which had reduced staffing levels because of the NMW or other changes to employment law.

Almost all these case studies and surveys suggest management in small firms in these low paying sectors is reactive. Consider the hospitality case which surveyed 20 small businesses in the Portsmouth area in 2000 including hotels, restaurants, public houses, clubs and contract caterers. Before the NMW over a fifth of workers in these firms earned below the NMW and its introduction compressed the wage structure. Management simply used the inherent flexibility in the jobs and the lack of formality in employee-management relations to accommodate the NMW. The authors conclude that the "prevailing pattern of employment relations [was] barely altered. . . . . The national minimum wage has not so much challenged existing practices in hospitality as reinforced them" (p.44). It is interesting to note in passing that many studies report that staff shortages were usually eased by the introduction of the NMW, hinting at a monopsonistic labour market.

Mason et al. surveyed over 17,000 small businesses to gauge their likely reaction to the 2003 uprating (table 6). They used a 5-point scale where 1 was a significant decrease in

employment and 5 was a significant increase in employment. It can be seen that the mean responses are a tad below 3 (no change). Any reduction in total employment was expected to come via hours rather than people (but remember these are likely, not actual, reactions to the higher NMW). The authors state that there is no evidence of small business adopting "high-level competitive strategies based around capital investment and improved service quality. . . . the NMW has had a limited effect on the small business sector".

5. Reasons for small employment effects

Evidence suggests that the employment effects of the NMW thus far have been small or non-existent. This section offers twelve explanations for this finding. We start with two explanations which can immediately be rejected: it is not the case that the NMW was set below extant wages or that coverage is incomplete. We then consider five possible reasons: long run effects have not been captured; the impact of the relatively large hikes in the NMW 2003-06 have as yet been insufficiently studied; mobility among low paid workers means that for many the NMW is a stepping stone to a higher paid more secure job; incomplete compliance may moderate any employment effects; and one particular offset is sometimes unlawfully used to lower employers' wage costs. Then we turn to five probable explanations. It is commonsense to suggest that productivity, prices and profits will be altered to help accommodate the NMW and the evidence confirms this. Next there is some evidence that employers alter weekly hours. And finally labour market frictions – modern monopsony – imply that competitive theory provides an incomplete description of the low paid labour market.

a. Rejected explanations

Was NMW set below the competitive wage?

For the NMW to impact on employment, the wage must be set above the competitive wage. Was it, instead, set at or below the competitive wage? The evidence in section 2 is unambiguous. The introduction and subsequent upratings of the NMW raised the absolute and relative pay of those towards the bottom of the distribution. At its introduction the average growth in earnings 1998-1999 for those below the NMW was at least double the growth in median earnings. At the time of its introduction the NMW was 47.6% of median earnings. The corresponding 2007 figure is around 52%. As Butcher (2005) – a government economist – puts it: ". . . the increase in median hourly earnings for adults aged 22 and over was greater than the increase in hourly earnings for those in

the bottom half of the hourly earnings distribution in the period 1992 to 1997. This contrasts starkly with the period that covers the introduction of the minimum wage. Between 1998 and 2003 hourly earnings at the lower end of the pay distribution grew faster than at the median" (p.430). Clearly, the NMW has not been set at or below the competitive wage.

Incomplete coverage

Incomplete coverage of the minimum wage will tend to moderate any measured employment effects because the worker can switch to the uncovered sector to find a job. Thus, under our previous wages council system (abolished in 1993), an employee who lost her job in the covered retail or hospitality sector might move to the uncovered care home or cleaning sector. By contrast coverage of the NMW is near universal. The National Minimum Wage Act 1998 states that the minimum wage is payable to workers[8] working, or ordinarily working, in the UK under a contract of employment, and who have ceased to be of compulsory school age. Coverage is not restricted to employees, but rather includes "special classes of person" such as homeworkers, agency workers and casual labourers. DTI (2004) and Studd (2006) set out the non-covered workers: genuinely self-employed; company directors; those of compulsory school age; volunteers/voluntary workers; students doing work experience as part of a higher education course; people living and working within the family**;** religious and other communities; prisoners; members of the armed forces; share fishermen; some mariners. Although this is quite a long list of exceptions, leaving aside the self-employed and the military, each category is tiny and it is clear that virtually all civilian employees are covered by the NMW. Someone who loses her job in a care home because the NMW is set too high is unlikely to join the military or become a share-fisherman in order to get work. Therefore it cannot be held that the modest employment effects of the NMW are a consequence of having a significant uncovered sector.

[8] Section 54 defines a worker as: an individual who has entered into or works under (or, where the employment has ceased, worked under) – a contract of employment; or any other contract, whether express or implied and (if it is express) whether oral or in writing, whereby the individual undertakes to do or perform personally any work or services for another party to the contract whose status is not by virtue of the contract that of a client or customer of any profession or business undertaking carried on by the individual.

b. Possible explanations

Short run versus long run

Textbook theory refers to the long run adjustment of employment. In the short run both the labour input may be costly to adjust (e.g. unfair dismissal claims or redundancy payments) and non-labour inputs similarly costly to adjust or may be "sunk" (e.g. as Card and Kreuger suggest, the physical structure of a fast food restaurant). With costly adjustments or sunken inputs, employment will not automatically respond immediately to an increase in the minimum wage: "Rather, adjustments will take place over the long run, as some firms exit the industry, others gradually downsize, and potential entrants are deterred from starting new firms" (Card and Kreuger 1995 p.367).

This presents a problem. The longer the time horizon, the more other factors come into play to also influence employment. For example the Working Time Regulations came into force around the same time as the NMW. One important strand of this Directive is that all workers must have at least 4 weeks paid holiday. Low paid employees were more affected by this Directive than others – they previously had fewer weeks of paid holidays than higher paid workers. Each extra week of paid holiday was equivalent to a 2% increase in the labour costs of that worker. So this might influence employment around the time of the introduction of the NMW. More recently, the steep rise in energy costs has been cited by the hospitality sector as a factor influencing employment.

In fact many of the studies cited in tables 5 and 6 do extend over more than a few months. When analysing the introduction of the NMW Stewart (2004a) went back 5 years (it was widely known that there would be a NMW from around 1995) and the two studies on hours went forward two years after the introduction of the NMW. The study of care homes similarly allowed for time to adjust and the WERS panel provides information on the change in employment over a six year period 1998-2004. Therefore my judgement is that it is unlikely that the lack of significant employment effects is a consequence of the studies all focusing on the short run. And, in any event, it is pretty much impossible to test for long run effects because so many other variables affect long run employment.

Not fully studied large rise in NMW 2003-06

The largest single impact on pay came at the time of the introduction of the NMW in 1999. As table 2 indicates, the NMW then fell relative to the median in 2000 and 2001. Subsequently it has risen relative to the median by 7 percentage points. The research reported in section 4 concentrates on the employment effects of the introduction and

uprating of the NMW up to 2004 and finds little or no impact. But one must not conclude that, therefore, the later upratings similarly caused no job losses. This has not yet been thoroughly investigated. The significant ratcheting-up of the NMW between 2003 and 2006 will surely provide another good test of the textbook model once the relevant data are available.

Mobility out of minimum wage employment

For two fifths of workers a minimum wage job in one year is a stepping stone to a higher paid job the next year. This matters because the probability of remaining in employment is positively associated with the wage. Bryan and Taylor (2006) and Jones et al. (2004) carefully analysed this issue using data on workers aged 22-60/65 from the BHPS and LFS respectively for the period 1999 to 2004. In each study low pay is defined as being paid at or below the prevailing NMW. Their findings are rather similar.

Bryan and Taylor examined individuals' work history over the period 1999-2004. The two key findings are: (i) NMW receipt is quite common: over one worker in five was paid at or below the NMW at least once in the six years; (ii) but only half the recipients were on the NMW for more than one year. The details concerning the proportion of workers never in receipt of the NMW, occasional receipt (1 or 2 years) or persistent receipt (3 or more years) were:

Category	%	% conditional on NMW receipt
no NMW, always in work	57.9	-
no NMW, not always in work	20.0	-
occasional NMW, always in work	9.2	41.5
occasional NMW, not always in work	7.7	34.9
persistent NMW	5.2	23.6
Total	100.0	100.0

The average duration of a low paid job 1999-2004 was, state Jones et al., 1.5 years. They analysed year to year exit rates from low pay (rather than experience over all 6 years):

	%
remain at or below the NMW	44
exit to higher paying job	40
exit to unemployment	4
exit to inactivity	12

Thus, consistent with Bryan and Taylor, under half of workers defined as low paid in one year remain in that state in the next year, and the great majority who exit from low pay do so for a better paying job where the probability of remaining in employment is higher.

Non-compliance

Non-compliance can be thought of as equivalent to the uncovered sector (see e.g. Ashenfelter and Smith 1979). ONS (2005), using ASHE, indicate that in April 2005 327,000 jobs were paid below the NMW split roughly equally between full-time and part-time, with women more likely than men to be in a job paid below the NMW. Second jobs are more likely to pay below the NMW than main jobs (Ormerod 2006). However, this 327,000 figure – or 1.3% of UK jobs – does not necessarily represent non-compliance.

First, some among this group are paid below the NMW for good reasons. Some apprentices and trainees are exempt from the NMW. And if employees receive free accommodation employers are entitled to offset the hourly rate (see LPC 2006, chapter 4).

Second, and of much more concern regarding compliance, is the unknown number of workers who either do not show up in the ASHE data or who appear in the data but whose hourly earnings figure is overstated, normally because hours are under-reported. On the basis of research, visits, oral and written evidence, and discussions with relevant Departments, the LPC believes that this non-compliant group is growing but it has proved impossible to quantify it (LPC 2005, chapter 6). Sectors of concern include: Chinese and Indian restaurants, Chinese health shop chains, home working, nurseries, hairdressing, agriculture, food processing and some construction work. Working arrangements include sub-contracting and many of the workers whose employer is not complying with the NMW are immigrants, legal and illegal.

Consider the case of the Chinese community in London. I have spoken (with an interpreter) to more than 10 employers and more than 20 workers. The sectors include: restaurants, health shops, food manufacture and distribution and clothing. In each case the employer was Chinese. Not a single worker below the level of chef or shop manager was receiving the NMW. Most of the workers had no written contracts and almost all were paid in cash. None were receiving tax credits. Chinese workers and employers all use a weekly wage as their benchmark. In a sense the hours are irrelevant – the boss wants the job done and the worker has a weekly wage target. It is unlikely these workers will appear in ASHE or the LFS even though some, at least, had national insurance numbers. When the employer is required to submit any documentation to the authorities

he will do so via an accountant. Thus a typical wage for a low skill worker in a Chinese takeaway restaurant is perhaps £180-£200 per week (cash) for 6 days working perhaps 10am – 2pm and 5pm – 11.30pm, or 63 hours a week. The corresponding hourly rate is around £3. If necessary the accountant will understate the weekly hours to signify compliance with the NMW. The Chinese community describe this practise of a weekly target for pay and downward manipulation of hours as follows: *'Yǒu Xiě gōng rěn zhuò quán zhǐ gōng zhuò deìn shì lǎo bǎn bào shuì dán shàng zhí shi gé jiān zhi gong ren.*

In oral evidence sessions the LPC were told – by employers who do comply – of pervasive similar practices in fruit and vegetable picking and processing often involving Eastern Europeans and Chinese. The sub-contracting arrangements in these sectors probably make non-compliance more difficult to monitor. And in research for the LPC Ram et al. (2004) find considerable non-compliance in small firms in Leicester in the catering and clothing trades, again via the manipulation of hours when documentation was necessary.

Presumably compliance depends, in part, on the probability of being caught not complying and the penalty for non-compliance. Frankly it is amazing that so many employers **do** comply with the NMW. A worker can bring a claim concerning underpayment to an Employment Tribunal to recover the money owed. However, where a judgement is in favour of the worker but the employer fails to pay the award the Tribunal does not have the power to enforce the award and the worker must seek payment through the civil court system. Not surprisingly, the number of Tribunal cases has fallen almost monotonically since 1999-2000, to 440 in 2005-06.

Rather, the main enforcement action comes via HM Revenue and Customs. HMRC must, statutorily, investigate all complaints of underpayment it receives. Further, it carries out its own risk assessments and investigates employers accordingly. Recently HMRC decided to target particular sectors, hairdressing in 2005 and childcare nurseries in 2006. Each year since 1999-2000 HMRC has made around 5000 visits to an employer, some two fifths originating from a complaint to HMRC by a worker. In 2005-06 non-compliance was found in 1582 (32% of) cases. There are around 1.6 million employers in the UK. Therefore a typical employer can expect a visit from HMRC once every 320 years and to be found not complying once a millennium. The probability of being caught for non-compliance does not appear to give a strong incentive to comply. Compare this with enforcement under the previous Wage Council system. In 1998 the Department of Employment Wages Inspectorate had 71 inspectors. They checked wages in 30,000 establishments visiting two thirds of these, equivalent to 280 visits per inspector per year

(DE 1988). By contrast HMRC has slightly more inspectors in 2006 (90) who make an average of just 55 visits each in a year.

Ram et al. (2004) studied 20 mainly non-complying small businesses in the Midlands. Only one – a clothing company – had had an inspection: "An inspector came three weeks ago to look around. He sent a letter to all our employees saying if you are being paid the NMW don't reply. Obviously they're all in cahoots with their family credit. I'm not doing anything wrong. . . He found no problem. He was supposed to come in for the day – he spent an hour going through the books and two hours talking about [the local football team]. This was an Inland Revenue check" (p.37).

There is a further issue here. HMRC tend to visit "proper" employers – as a complying gang-master put it in evidence "those with filing cabinets" (Association of Labour Providers 2006). Presumably employers without filing cabinets – who are less likely to get a visit – are less likely to comply, not just with the NMW but also with tax, insurance, working time and health and safety regulations.

And what if the employer is caught not complying? He is a naughty boy, and must pay back the arrears (an average of £130 per worker in 2005-06). Providing he does so there is no other penalty. In effect he has had an interest-free loan from the worker. If the employer does not reimburse the arrears HMRC can issue an enforcement notice and then a penalty notice such that the employer would face a fairly modest fine.

In serious cases HMRC can bring a criminal prosecution for any one of six criminal offences: refusal or wilful neglect to pay the minimum wage; failing to keep minimum wage records; keeping false records; producing false records or information; intentionally obstructing an enforcement officer; and refusing or neglecting to give information to an enforcement officer. Each offence carries a maximum fine of £5000. No such criminal prosecutions have been taken to date.

Thus the typical employer gets caught for not complying with the NMW once every thousand years and there is no penalty for such non-compliance. It is not surprising that non-compliance is probably on the increase. The LPC has frequently drawn attention to this feeble enforcement and the trivial penalties (see e.g. LPC 2005, chapter 4) but they are yet to be beefed-up.

It is possible that one favourable unintended side-effect of non-compliance – the *de facto* uncovered sector – is smaller employment effects in the covered sector. Maybe the findings in tables 5 and 6 flow from non-compliance, but it seems unlikely. Most of the

studies use data from e.g. NES/ASHE or WERS where the employers are likely to be complying employers. And most workers in non-complying firms are unlikely to show up in the LFS. Thus a difference-in-difference study just before and just after the introduction / uprating in the NMW comparing workers just above / just below the NMW which finds no employment effects is probably not achieving that finding because those just below prior to the introduction / uprating in the NMW switch to non-compliance rather than non-employment.

What does seem more likely is that there would be employment effects in the non-complying sector, like the Chinese labour market in London, if the NMW were properly enforced. The Chinese restaurant, health and clothing product markets are fiercely competitive and employers uniformly try to keep the lid on their labour costs. Further, as Ram et al. (2004) note in their parallel study of the informal sector in the Midlands, non-enforcement of the NMW may arise "due to passive by-standing or tacit encouragement (since informal economic activity can be viewed as a means of generating employment among otherwise socially excluded sections of the population, often in decaying urban areas)" (p.9). Ram et al. clearly believe that full compliance would force many small businesses in the clothing and catering sector to close but, interestingly, believe that such closure, would be for the best: "The purpose of the minimum wage laws going back to the original Trade Boards of 1909 is, after all, to eliminate 'sweating', and if competitive survival is possible only with sub-minimum wages then the conclusion is that the relevant firms have to be pressed out of business" (p.49).

Offsets

When labour costs rise because of the minimum wage the employer has an incentive to economise elsewhere. There is not much scope for cutting back on fringe benefits like subsidised meals or generous pension provision because the incidence of such benefits for minimum wage workers is low both absolutely and relative to higher paid workers.

On an LPC visit I came across a very nice example of an offset concerning company provided training in a high street chemist retail chain. Previously, when a worker was off-site to receive some formal training the management provided a replacement worker but now it no longer did so. Either the existing colleagues had to work a bit harder or service to the customer worsened. This is, strictly, an employment effect but it might be hard to spot in an econometric study. Note, however, this policy was not introduced solely because of the NMW, there were other factors like the working time regulations which also raised labour costs.

Probably the main offset sustaining employment comes courtesy of the state rather than the employer. The NMW sets a floor to pay but is unrelated to family income. In order to make work pay the government uses tax credits (see appendix). For given family circumstances the tax credit is larger the lower the pay received. There is evidence of illegal collusion between employers and workers such that both gain at the expense of the state (for detailed discussion see e.g. Ram et al. 2004 p.29). It works as follows. The employer understates the pay of the worker, but understates the hours by even more to demonstrate compliance with the NMW. This permits the worker to get a larger amount of tax credit and the employer to pay a correspondingly lower hourly wage. The employer, for consistency, understates his own turnover which lowers his VAT and income tax burden. One reason the NMW was introduced was to put a lid on aggregate tax credit payments. Such collusive behaviour between the worker and the boss lifts that lid, but it may have the unintended favourable side-effect of higher employment – e.g. in Indian and Bangladeshi restaurants or Indian clothing manufacturers – than would otherwise be the case.

c. Probable explanations

Productivity and effort

The NMW might increase labour productivity in a number of different ways. First, if capital is substituted for labour this capital deepening raises labour productivity. Second, employers may respond by improving the quality of their capital. Next, the labour quantity per head or per hour will rise if there is an intensification of effort. This can come about through an increase in monitoring or because employees are motivated to work harder because of the higher wage. And if the higher wage reduces labour turnover this will also tend to increase the quantity of labour input because less time is spent on hiring and induction of new workers. Fourth, the quality of the labour input might increase if the skill mix alters or if individual workers' human capital gets augmented through extra education or training. Finally, employers may pay more attention to work organisation to achieve extra output per unit of labour and capital input. In theory it should be possible to measure each of these five routes to higher level productivity. In practice the growth in labour productivity is normally held to depend on capital deepening (changes in the capital:labour ratio) and the growth in total factor productivity (TFP) – the residual from the other four channels. Any substitution of capital for labour will tend to reduce employment whereas greater effort, better organisation and more investment in human capital will tend to moderate any employment effects of the NMW and may even raise employment. Evidence on labour productivity (see table 8) is from

industries, two nationally representative samples of firms, the low paying sectors and individuals.

Forth and O'Mahoney (2003) first consider labour productivity growth (defined as growth in real value added per hour worked) in seven low paying sectors for 1995-98 before the NMW and 1999-2000 after the NMW. They suggest that there was an acceleration in the growth in labour productivity in textiles, security and hairdressing around the time the NMW was introduced, but no such acceleration in retail, hospitality, cleaning or clothing and footwear. Second, they correlate across 183 industries the wage bill impact or "bite" of the NMW and the growth in labour productivity for each year 1995-2000. The correlations are positive but non-significant.

Draca et al. (2006) consider a representative sample of 378 firms over 6 years. They use the difference-in-difference technique comparing the "policy on" period 1999-2002 with the "policy off" period 1996-99. The treatment group consists of low wage firms (average wage below £12000 pa) in a low wage region – industry where more than a tenth of the workers in the relevant cell were previously paid below the minimum. The control group is higher wage firms (average wage £12000 - £20000 pa). Productivity is defined as sales divided by employment. Control variables include industry, region, firm age, capital-sales ratio and various workforce characteristics. In the policy-on period compared with the policy-off period the treatment group experience a gain of productivity of 5.4% compared to the control group but the association is not statistically significant.

Evidence on productivity movements in firms in the ONS Annual Business Inquiry around the time of the introduction of the NMW was examined by Galindo-Rueda and Pereira (2004). They matched the firms with: (i) individual workers in the New Earnings Survey (NES); (ii) industry/region cells from the NES. The treatment group was defined by the fraction of workers paid below a minimum 1998 threshold either inside the firm or inside the relevant industry/region cell. In each case the authors reported separate results for manufacturing and services. Productivity was defined as gross output per worker and, in one investigation, total factor productivity. The core of the analysis was to determine relative productivity movements between the treatment and control firms around the time of the introduction of the NMW. The evidence suggests that labour productivity in firms affected by the NMW rose relative to the control group – in one investigation by 11% and in the other by 6-17%. This hike in labour productivity was stronger for firms in services than in manufacturing.

Productivity in the residential care home sector was analysed by Machin et al. (2003) using a sample of between 486 and 586 homes. The two productivity indicators were the change before/after the introduction of the NMW in (i) residents per worker hour; (ii) the home manager's subjective assessment of worker effort – up, same, down. The study tested whether the change in productivity was associated with the initial fraction of workers affected by the NMW or by the initial wage gap. Controls included both demographic and home characteristics. All the associations were positive – for example a 10% increase in the wage gap was linked to a 9% increase in effort – but none were statistically significant. A sub-sample of between 135 and 183 of these care homes was analysed in greater detail by Georgiadis (2006) for both the introduction of the NMW and the 2001 uprating. The supervision intensity was negatively related to the wage: a 4% increase in the wage bill was associated with a 5% fall in the ratio of managerial to other workers.

We also have case study evidence for other low paying sectors. In textiles and in clothing and footwear Undy et al. (2001) and Heyes and Gray (2001) suggest there was some work-intensification. In retail and hospitality the large LPC survey (LPC 2000, table A5.7) – where those affected by the NMW were more likely to respond than those unaffected – suggested more attention to labour costs but most respondents said the changes they had made were "slight" rather than "significant". In cleaning and security Bullock et al. (2001) suggest price rises, increased attention to labour costs and lower profits were adjustment mechanisms rather than moves to raise productivity.

Labour productivity can also be increased if the employer invests more in the human capital of the workforce. Arulampalam et al. (2004) investigated this route using data on some 2500 individuals from the BHPS prior to and after the introduction of the NMW. The familiar difference-in-difference technique compared the treatment group of those whose wage was previously below the NMW with a control group of those previously paid at the NMW or up to 15% above it. Both the incidence (probability) and intensity (days) of training were examined. The results are clear cut. In the raw data the likelihood and intensity of training received by the treatment group increased relative to the control group. And when the difference-in-difference statistical technique is used, with demographic and firm control, the authors state that – comparing the treatment group with the control group – the training probability increased by 8-11 percentage points and the intensity (days) of training by 10 percentage points. Both these results were statistically significant. Dickerson (2006) undertook a similar study using the LFS. He too finds an increase in the probability of training for the treatment groups compared with the control group but the increase is not statistically significant. It should be noted in passing that this work suggests that the competitive model may not be a complete

description of the low paid labour market. If the labour market is competitive it is predicted that the minimum wage makes it less profitable to employ unskilled workers. But in a non-competitive labour market the firm is getting a rent and so would like to retain the worker – and the firm now has an incentive to improve the productivity of the employee via training in order to restore the surplus.

Summarising, the evidence from industries and firms across the whole economy and for the care home sector suggests a positive association between the NMW and productivity, but typically not statistically significant. Unfortunately it is impossible to generalise whether or not this apparent weak advance in labour productivity triggered by the NMW was the result of employment-reducing capital deepening or employment-stabilising work intensification and better work organisation. Thus study of different industries (Forth and O'Mahoney 2003) suggests capital-labour substitution in security but improved organisation in textiles. The nationally representative investigation of firms (Draca et al. 2006) points to the employment-stabilising routes to higher productivity because it controls for differences among firms in their capital:sales ratio. Likewise the case study evidence points to some work intensification in clothing and textiles (Heyes and Grey 2001) and for care homes both more effort (Machin et al. 2003) and less monitoring and supervision (Georgiadis 2006). On balance the evidence favours employment-stabilisation routes rather than substitution of capital for labour. This conclusion is reinforced by the evidence that the NMW led to more workers receiving training and longer durations of such training.

Prices

If any increase in labour costs caused by the NMW can be passed on through higher prices any employment effects will be that much smaller. There have never been any suggestions, for example in the Bank of England quarterly *Inflation Report*, that the NMW ratcheted-up the aggregate inflation rate. This is not surprising. Assume a mean hourly UK wage of £10 and a 25p increase in the NMW applying to 7% of jobs. This would raise the aggregate wage bill by just 0.17%. As Wadsworth (2007) puts it: "RPI does not change at the time the NMW changes, indicating that overall the NMW had little impact on prices".

Rather, the issue concerns the relative prices of goods and services produced by minimum wage workers. Wadsworth (2007) is the only investigation of this matter. He first ranks sectors according to the incidence of minimum wage employment (see table 8). Nine of the top ten sectors on this indicator concern consumer services so he omits the tenth sector industrial cleaning. The nine sectors employ one sixth of minimum wage

workers. Using the Family Expenditure Survey 1997-2005 he does a difference-in-difference analysis before/after the NMW, benchmarking the sector prices against the RPI. Given the labour intensive nature of these consumer services it is not surprising that their prices rose, on average, by one percentage point a year more than the RPI throughout the period. But, more importantly, after the NMW was introduced these prices rose, on average, by an **extra** 0.8% a year relative to the RPI. These relative price movements are ranked in column 2 and range from an extra 2.2% a year in home cleaning down to 0.1% in hairdressing.

The ability to raise relative prices is related, albeit weakly, to the own-price elasticity of demand. For the top five sectors (home cleaning, road travel, hotels, canteen meals and takeaway food) where the relative price increase is statistically significant, only one of the five has an own-price elasticity greater than minus 1 suggesting it is easier to pass on price increases. By contrast two of the bottom four sectors (pub drinks, restaurant meals, dry cleaning/laundry and hairdressing) have an own-price elasticity greater than minus 1, so it is more difficult for them to pass on price increases.

It is clear that the price of consumer services provided by NMW workers has risen, since the NMW, relative to the RPI. Thus some of the increase in costs has been passed on via higher prices thus attenuating any employment effects. We complete the picture with a diversion on the income distribution consequences. When the wage councils were first established in the UK the Webbs (1911 pp 780-783) pointed out that if minimum wage goods and services are disproportionately consumed by minimum wage workers and the prices of these items rise, then the minimum wage workers may be no better off than before the minimum wage. It will be seen in column 4 that the price effects are spread over all households and not especially concentrated on minimum wage households. There are 11.6% minimum wage households in the FES example. They consume disproportionately more of pub drinks, canteen meals, takeway food, road travel and restaurant meals but consume disproportionately less hairdressing, dry cleaning/laundry, hotels and home cleaning. It seems that the distributional consequences of relative price movements associated with the NMW are pretty neutral.

Profits

It is possible that profits took the strain. This can be investigated using evidence from firms and sectors and by analysing movements in the share of profits in national income.

Firms and sectors

There are three studies using information from firms and sectors concerning the way the NMW altered profits. Draca et al. (2005) analyse data from both a representative sample of UK firms and a sample of care homes. Georgiadis (2006) is a follow-up study of the 2001 uprating for a sub-sample of care homes. Experian (2006) analyse profits in the retail and hospitality sectors 1999-2004.

Details of the Draca et al. (2006) research is set out in table 10. Consider first the representative sample of UK firms drawn from the Financial Analysis Made Ease (FAME) dataset. The balanced panel is 342 firms over six years 1996-2002 yielding 2052 observations. The unbalanced panel consists of some 700 firms with 3820 observations. The method is difference-in-difference. The first difference is pre- and post- the introduction of the NMW. The second difference is to compare the treatment group of low wage firms (average wage below £12000 pa) with the control group of higher wage (£12000-£20000 pa) firms.

Average wages in a firm might be misleading. For this analysis to make sense it is important that low wage workers are concentrated in low average wage firms. The alternative is that they are spread over the whole distribution of firms. WERS 1998 data show that there is a very strong negative correlation between the fraction of workers paid below £3.50 an hour and the average wage in the workplace – the required concentration exists. Over 1996-2002 pay in the low wage firms grew by 21% against 12% for the higher wage firms. Profits are defined as gross profit (prior to deductions for tax interest and dividends) as a fraction of turnover (sales). The controls are industry, region, capital-sales ratio, percent graduates, percent female and percent union, use of IT from the 3-digit SIC.

The results are clear-cut: "profitability fell in firms that were more affected by the NMW introduction". The difference-in-difference change in profitability is -0.027 to -0.042. The original profit margin in these firms was 0.40. So profit margins fell, at the mean of the treatment group, by 8% to 11%. If this fall in profits was concentrated on firms with low initial profits, the affect of the NMW on lowering profits would be that much larger.

We saw in section 2 that the NMW had a substantial affect on wages in the care home sector. Draca et al. (2006) analyse whether or not homes which had to raise their wages the most (i.e. those with the largest wage gap) experienced the biggest drop in profits. This is indeed the case. The mean wage gap was .04. The elasticity of the profit margin

with respect to the wage gap was -.6, so the average firm faced a reduction in its profit margin of .024. Its original profit margin was .102 so the NMW reduced profit for this average home by 23%. Georgiadis (2006) undertook a follow-up study of the 2001 uprating for 112 care homes on the south coast. He used the same method, definitions and controls as Draca et al. (2006). There was negative association between homes with a larger fraction of affected workers or larger wage gap and profitability, but it was not statistically significant. The evidence suggests that in 1999 firms did not pass on any higher labour costs via higher prices so profits fell, whereas in 2001 they raised prices to help protect profit margins.

Evidence from both the representative sample of UK firms and a sample of care homes, the lowest paying sector of the labour market, demonstrates that the introduction of the NMW was associated with a fall in profits. This tempering of profits was not associated with an increased likelihood of a firm or care home closing down. Therefore Draca et al. conclude that "firms were making profits from paying low wages prior to the minimum wage introduction and that one consequence of the introduction of the minimum wage to the UK labour market was to moderate these "excess" profits by channelling them back to the wages of low paid workers".

Profits in the retail and hospitality sectors have been studied by Experian (2006) over the period 1999-2004 using regional data on the bite of the NMW in the sector and the movements in gross operating surplus. The relative gross operating surplus was lower in regions where the bite of the NMW was strongest but the association was not statistically significant.

In summary, taking all three studies, the evidence suggests that the initial introduction of the NMW caused a relative fall in profits in the more affected firms. In the care home and retail sector subsequent upratings in the NMW are negatively associated with profits but the link is not statistically significant – essentially the upratings did not cause a further fall in profitability.

Profit shares

The NMW affected profits at a micro-level – firms employing low wage workers experienced a relative fall in their profits. But it is also possible that the NMW influenced profits at the macro-level. Calculating the shares of national income going to labour (wages) and capital (profits) is fraught with difficulty. The measurement problems include how to treat: public sector employees and corporations; self employed; rent; North Sea oil/gas; financial corporations; capital consumption; taxation; inflation

(current/historic cost accounting). Fortunately, even though many researchers do not give these measurement issues sufficient attention, the trends are pretty clear. In the quarter-century 1950-1975 the profit share fell, consistent with the downward secular trend from the beginning of the century (Phelps Brown 1968, Spencer 1988, Glynn 2007). For the next two decades, around 1975 to the mid-1990s, the profit share rose substantially (Boyd 2004). This probably reflects the decline of union membership and power, more efficient organisation of work and the huge growth in the effective world labour supply as China, India and ex-CIS countries enhanced their contribution to world trade.

Profits peaked as a share of private GDP at the very time the Low Pay Commission was established in 1997 (Boyd 2004, Bank of England 2006). Using the profit benchmark preferred by the Bank of England figure 5 shows that the profit share fell by a quarter around the time the NMW was introduced and since 1997 that share has always been lower than the average profit share since 1980. This fall in profit share in the last decade is confirmed in all official measures set out in table 11. Broadly, the wage share has increased by 2 percentage points while the profit share is, correspondingly, 2 points lower. Many factors influence profit shares. The overvalued exchange rate probably contributed to the fall after 1997. And recently companies have used resources to help make good deficits in their pension funds, and have absorbed (in part at least) higher energy costs. But the association between the establishment of the LPC, the introduction and uprating of the NMW and the decay in profit share is also suggestive. In particular, it may be more difficult for firms to pass back to workers the cost of this labour market regulation than the cost of, for example, extra holiday entitlement and extended maternity leave.

Hours, not workers

In the theory section we noted that in the short run the firm may adjust hours rather than workers. There is some evidence for this (see section 4). None of the studies of individuals using the difference-in-difference technique found any employment (i.e. worker) effects but Stewart and Swaffield (2002, 2004) reported modest cuts in hours for those affected by the NMW. Connolly and Gregory (2002) did not find hours reductions for their sample of female workers although the longer the time period analysed the closer they got to such a result.

Possible adjustments in hours was pursued by the LPC in oral evidence (2/11/06) from the British Retail Consortium and USDAW, the shopworkers union. The major retail grocery chains allocate an aggregate amount of labour to each store by week, day and time of day. Adjustments come via the number of part-time shifts or hours per individual

shift. For one major retailer the aggregate hours allocation is based on predicted turnover two weeks hence and the manager is allocated 9.6% of that turnover for the wage bill. If the manager can operate with a lower fraction s/he gets a higher annual bonus. Clearly any uprating of the NMW which affects the wage bill will cause the manager to look closely at labour costs with any fine-tuning normally via the number of part-time shifts.

Modern monopsony

Traditional monopsony – the company town – is unlikely to exist in the present low paid labour market. But modern monopsony where a degree of labour market power co-exists with competition among employers is very likely. Manning (2003, chapter 13) sets out fifteen empirical findings supporting the idea of monopsonistic wage determination. These are not rehearsed here. Instead we limit discussion to employer wage policies, mainly drawn from research commissioned by the LPC.

First, government statisticians (Lam et al. 2006) state that: "there is both theoretical support and anecdotal evidence for the idea that firms have the flexibility to set their own wages and use it in this segment of the labour market . . . companies have significant power to set wages at an appropriate level" (p.10 and 23).

Second, in their very detailed study of small firms in the Midlands, Ram et al. (2004) provide numerous examples of company wage setting. For example: "Employers in the restaurant sector also tended to dictate levels of pay in their firms" (p.30). A main reason "for workers staying in these firms . . . [was] their limited labour market opportunities and their narrow range of comparisons with other jobs" (p.3). In one firm an employee "praises the firm's friendly atmosphere and good colleagues" but "confesses to feeling demoralised and trapped . . . I would love to leave but I have no other qualification and I am too afraid to take a risk now" (p.24).

Third, the evidence (see section 4d) from industrial relations studies suggests a reactive, muddling through, approach to dealing with the NMW. The text book competitive labour demand curve would tend to apply if, instead, the firms took a more strategic approach. This would involve deliberately minimising labour costs by cutting workers or hours, or a move upmarket such that more skilled workers would be substituted for less skilled workers. There was no evidence of such behaviour in the studies surveyed. Rather the employers tended to use the inherent flexibility in the tasks to muddle through. They also mostly reported that the NMW had tended to make it easier to fill vacancies.

This is all evidence, over and above the detailed documentation by Manning, that the standard textbook model is an incomplete description of the low paid labour market. The frictions give the firms some power over their employees. In these circumstances a minimum wage set modestly above the existing wage might [note: not "will"] raise both pay and employment. This is one plausible explanation for the lack of employment effects in these low paying sectors and in the economy as a whole.

6. Some History

a. Context

In order to understand the impact of the NMW on pay and employment this paper has examined, *inter alia*, pay setting, coverage of the NMW, competitive versus monopsonistic labour markets, (non-) compliance, offsets and the interaction between the NMW and the social security system. But similar issues were also analysed a century ago.

In the mid-1890s Fabian writers coined the slogan the "national minimum" to describe their political and social policy of spreading previous state intervention regulating factory conditions and public health into, for example, wage determination, the duration of compulsory schooling, the need for old age pensions, reform of the poor laws, the extension of workers compensation for industrial injuries and improving housing conditions (McBriar 1966).

Beatrice Webb (neé Potter) had, together with Charles Booth, investigated the sweated conditions (low pay, long hours, unsanitary working) of the tailors of the East End of London. She gave evidence to the House of Lords Select Committee on Sweating (1890) which reported that its evils "could scarcely be exaggerated . . . . earnings barely sufficient to sustain existence; hours of labor such as to make the lives of the workers periods of almost ceaseless toil, hard and unlovely to the last degree; sanitary conditions injurious to the health of the persons employed and dangerous to the public". In 1891 Sir Charles Dilke advocated minimum wage legislation for the sweated trades but failed to get the legislation passed. The Fabian Society then embraced the cause, setting out the cause of and remedy for sweating (Fabian Society 1894) and emphasising how women were at risk from the sweating system (Webb 1896). In their magisterial *Industrial Democracy* the Webbs (1897) advocated minimum wage protection as a component of the overall "national minimum" policy but they were agnostic between a system of trade boards by sector, based on the experience of Victoria in Australia, simultaneously

advocated in a Fabian tract (Macrosty 1897), and a legal national minimum wage for all workers, identical by region and industry. Indeed they only devoted half a page in a book of some one thousand pages to the fixing of the minimum wage.

The return to power of the Liberal government in 1906 opened the door to minimum wage legislation. It initiated an enquiry into rates of wages in the lowest paying industries (Board of Trade 1906) and the results were "even more shocking than had been expected" (McBriar 1966 p.260). The Fabian Society (Sanders 1906) weighed in with the first fully argued case for a national minimum wage and a further analysis of sweating (Hutchins 1907). In 1909 the Trade Boards Act was passed which established minimum wage machinery for tailoring, paper box making, machine-made lace finishing and the chain-making trades, with provision for extension to further trades if the Board of Trade considered the wages to be exceptionally low.[9] The Fabians welcomed this law although some members now favoured a wage based on subsistence needs rather than what the trade would bear (Fabian Society 1906 and second edition of Hutchins 1907).

The zenith of the Fabian contribution was the 1906 tract *The Case for a Legal Minimum Wage* (Sanders 1906) which was the first fully articulated call for a **national** minimum wage in Great Britain. This is a remarkable and sadly neglected document. In a mere 18 pages it discusses all the topics listed in the first paragraph above as well as matters like child labour and living wages as compared with minimum wages. The tract was also a creature of its time. It advocated a lower minimum wage for women than for men; suggested that some unemployment would be a "blessing in disguise"; and, while not hostile to immigration, had some salty views on Jews and the Chinese – "the cunning of the yellow man". In this section we examine this imposing chronicle, with side-glances at the related tracts and the work of the Webbs, Marshall, Pigou and other contemporary social scientists.

b. The wage

The discussion of the minimum wage in the 1906 tract covered the institutional machinery, the method of calculation, gender pay, the conversion of time rates to piece rates and deductions for the provision of accommodation. These are all topics that successive reports of the Low Pay Commission grapple with a century later.

[9] In a few small homeworking occupations there already existed voluntary boards, for example the Racquet and Five Ball trade – the Balls Board! There were only three manufacturers in the world, employing 40 homeworkers. The chief buyers of the balls were the public schools, who were prepared to pay a higher price provided the workers got a higher wage. The Eton headmaster (1909) describes the Board in detail; he was its Chairman

The tract noted that there were "practical objections" – which it did not share – to calculating and fixing the NMW:

> *"The work of calculating and fixing the minimum wage rate and of prevention of evasion would be so vast and minute that the wit of man could not devise machinery capable of coping with it"* (p.5).

Evidence concerning successful intervention in wage setting in Australia and New Zealand was presented to refute such practical objections (see also Macrosty 1897). Current evidence suggests that such objections were wrong concerning calculating and fixing the NMW but have great relevance to inspection and evasion.

The Webbs (1897) also dealt with concerns of economists and industrialists. They noted that: "from the viewpoint of the employer, one way of increasing the cost of production is the same as another" (p.773) and thus argued that their national minimum policy should apply to wages as well as sanitation and hours. They also emphasise that the intervention was designed to enforce minimum standards, not to arbitrate all wage rates.

Three principles were to underpin the NMW:

- It should be *"sufficient to enable our workers to be maintained in healthy existence. Therefore the wage should be calculated on what the worker requires for physical health and efficiency, and not what the trade will bear"*.
- The *"law must be national, that is it must apply to the whole country"*.
- It is to be a *"national minimum of real wages: that is to say a wage as, worked out in its cash equivalent, will equalise all local variations in cost of living"* (p.9).

The implementation of these principles was set out in some detail. "Healthy subsistence" for a man was to be based on the "average family, reckoned as consisting of a man, his wife and three children", while for a woman calculated for an "adult woman living by herself". The authors were surprisingly sanguine about defining the NMW in real terms: the calculation of "local variations in prices and rents would be made a part of the duties of county councils and boroughs" therefore "a staff of local inspectors would be required" (pp.14-15). It was recognised that rent was the main item causing local variation in the cost of living (p.18). But a Fabian colleague writing a year later (Hutchins 1907), while favouring the NMW, suggested that a money wage was more appropriate and "doubt the advisability of employing local authorities" to determine the cost of living. The NMW was to be set on a weekly basis for a "normal" 56-hour workweek (p.16).

Men were to have a higher NMW than women for three reasons. First, men had more family responsibilities than women. Second, men were of higher quality labour than

women. Third, some women only worked for pin money. Concerning family responsibilities:

> *"The reason for paying men more highly than women is that under our marriage institutions the man is the woman's paymaster for her domestic work . . . Therefore it is admitted that the man, having to support another adult and their children, must receive a wage sufficient to maintain these several persons, whilst the woman is regarded industrially as a single woman, needing only enough to support herself"* (p.9).

The document also justifies the gender pay gap because men and women "are two different qualities". It had been suggested that, as an alternative to the male wage being higher than the female wage, married men should be paid more than single men. The Fabians correctly recognised that:

> *If married men cost more in the labour market than single ones, employers would never employ a married man where a single one was available"* (p.9).

Yet in the next sentence:

> "*. . . if men and women were paid at the same rates, men would always be employed in preference to women because, fairly or unfairly male labour is considered industrially superior to female. The demand for 'equal wages for men and women' is perfectly well known to trade unionists as a device for keeping women out of men's trades"* (p.9).

Further, some women only work for pin money:

> *"It is quite a mistake to suppose that all direct recipients of starvation wages are starved. A large number are well fed and even blooming lasses who are really supported at home by their parents, but are willing to work in a factory for the sake of five or six shillings [one shilling = 5p] a week pocket money and the comparative gaiety of factory life"* (p.12).

Nevertheless, with a certain amount of magnanimity, the Fabians do allow that:

> *". . . women may be and sometimes are, compelled to resort to prostitution to keep themselves alive. The minimum wage, should, therefore, be sufficiently high to save them from so demoralising an alternative"* (p.13).

All in all:

> *"The national minimum wage must conform to three conditions: (a) it must be lower for women than for men; (b) all men must have the same minimum wage, and all women the same minimum wage; (c) the man's wage must be enough to support a family, and the woman's to support a single independent adult"* (p.9).

The notion that the male minimum wage should be higher than that for women persisted for much of the twentieth century. A NMW was discussed in the 1960s: in its consultative Green Paper the Department of Employment (1969) worked on the assumption that the rate for men would be greater than for women. And this, despite the fact that Barbara Castle was the Secretary of State and that the Equal Pay Act was about

to come into force in 1970, albeit not fully implemented until 1975 (Manning 2003, chapter 7).

Piecework or payment-by-results presents a thorny problem for the implementation of the NMW because the time rate has to be converted to a payment per piece for a standard effort level. Both the LPC (e.g. 2003 Chapter 3) and DTI (2003) have spent considerable time and ingenuity dealing with this problem, particularly concerning homeworkers, the very group the Fabians believed comprised the nadir of the sweated trades. The Fabians, with their optimism concerning state intervention and institution building, had no such concerns around piecework. First, the national weekly minimum wage was to be divided by 56 to get an hourly rate. Second, where necessary that time rate was to be rendered to a piece rate by a Trade Board, with representatives of employers and workers, for each industry. Third, there was to be a proper inspectorate, particularly concerning homeworkers, such that employers would need to keep registers and records of wages paid, work done and the rate paid. Not all contemporary observers were so sanguine. For example the Women's Industrial Council (1909) believed it would be near impossible to translate a minimum wage into piece rates and to enforce the wage, especially for homeworkers.

In some occupations the wage was paid partly in cash and partly in food and accommodation. The Fabians cite shop assistants, waiters and domestic service as examples (p.16, 17) and write that this "will be troublesome". And how! The LPC still struggles with the principle and details concerning deductions for accommodation (see e.g. LPC 2006, chapter 4) a topic which, in my view, it would be better to avoid altogether.

c. Coverage

Presently around 1-worker-in-10 has her/his wage directly raised by the NMW. The Fabians also asked: "what is the number of persons who would immediately feel the effects of the enactment of a legal minimum wage?" (p.18). Based on Rowntree's investigations in York the tract states that some 5 million people are members of working families that have "incomes insufficient to maintain merely physical efficiency". If we use the tract's own suggestion of a family with 3 children as a benchmark, this implies some 1 million workers with below subsistence wages. At the time the Fabians wrote (1906) the occupied population (i.e. employment) was as follows (see DE 1971, table 109).

	million	
Males	12.2	
females	5.1	
married		0.7
single, widowed, divorced		4.4
Total	17.3	

Thus the proposed coverage was around 6% (1m / 17.3m), a little lower than the coverage today, even though the Fabian NMW was based more on the notion of a subsistence wage for a family of five than on a minimum wage for an individual worker like today's NMW.

Such coverage was specifically intended to fill the vacuum resulting from the lack of collective organisation in the non-union sectors of the economy. The NMW and trade boards:

> *"would bring to the weakest sections of the workers a sense of the power of organisation and combination which, it is not too much to predict, would induce them to use the minimum wage as a stepping-stone to further improvements in industrial conditions"* (p.18)

d. Employment

The Webbs and other Fabians emphasised both labour market frictions and the working of competition and we shall suggest that it is plausible that they influenced both Marshall and Pigou, Britain's foremost early twentieth century economists. Fabians did not care for orthodox economic thought concerning the labour market. The Webbs (1897 Part III, chapter 1) were critical of, for example, McCulloch, J.S. Mills, Cairnes and Senior:

> *"There appears to be a superstition held by economists and politicians, even by those who have no prejudice against state regulation in itself, that the cash relation between employer and employed is so sacred that to interfere with it by law is to commit the unpardonable economic and political sin"* (p.4) . . . *"It [political economy] misled the nation on every practical issue; and it would if it could, prevent the enactment of a minimum wage law by giving yet another mistaken verdict against it"* (p.4) . . . *"They [college professors] urge that the cost of production would be increased in industries where the minimum was enforced, and that therefore they would inevitably collapse owing to the falling off in the demand for their products which would result from the rise in price caused by the increased cost of production. This would tend to swell the ranks of the unemployed"* (p.5).

Instead, the Fabians emphasised efficiency wages, monopsony, the lower female than male NMW, and what they considered to be the beneficial effects of some unemployment.

Just as, according to the Fabians, the Factory Acts banning child labour and imposing hours restrictions had boosted economic efficiency, so with an NMW:

> *"the largest proportion of an increased wage would give the increased mental and physical vitality which are the nation's real capital . . . [there would be] an increase of physical efficiency"* (p.18).

This echoes the Webbs (1897 p.779) "To put it plumply, if the employers paid more, the labor would quickly be worth more".

The need to supplement (or possibly displace) the standard competitive approach to labour market issues with one that emphasises frictions, so forcefully set out by Manning (2003), was anticipated by the Fabians. The Webbs (1897 p.779) recognised that: "firms just struggling on the margin would probably go under" and the 1906 tract that:

> *"A minimum wage law cannot help the unemployed. On the contrary, we must frankly face the fact that it will increase their numbers at first"* (p.11).

But then came the monopsony argument. The Webbs (1897 p.779, 783) noted that: "the mere fact that employers are at present paying lower wages than the proposed minimum is no proof that the labor is not "worth" more to them and their customers . . . there is no need to assume that anything like all those now receiving less than the National Minimum would be displaced by its enactment". And the 1906 tract states:

> *". . . a man who is actually employed at eighteen shillings [per week] may be quite employable at twenty-four, and a woman actually employed at twelve quite employable at eighteen. That is, if their employer had either to raise their wages or refuse to employ them at all, he would be content to raise their wages and be content with less profit. Consequently it must not be assumed that all the workers who are now receiving less than the legal minimum would be thrown out of employment"* (p.12).

Any female unemployment would be tempered by the lower female NMW because "if women and men were paid at the same rates, men would always be employed in preference to women" (p.10).

Marshall (1920) and Pigou (1920) were neither prejudiced against state intervention in wage setting nor solely emphasised the adverse employment effects of such intervention. Marshall refers to the "weighty and able treatise" (fn 163) of the Webbs and states that "if it [a minimum wage] could be made effective, its benefits would be so great that it might be gladly accepted" (Book VI, chapter 13) although he was also exercised about its coverage and those who lost their jobs "because their work was not worth the minimum wage". Pigou was similarly even handed: "some workpeople will be ejected from employment" (Part III, chapter 5) but "In places and occupations where wages are low because low grade workpeople are being "exploited" by employers, paid less than they are worth, there is no reason to expect that the forcing of the wage rate up to a fair level will cause a [loss of jobs] for it will not pay employers to dispense with their services. . .

the enactment of a national minimum time-wage will incidentally prevent the payment of certain low wages that are unfair, in the sense that they are the result of exploitation" (Part III, chapter 19). Marshall and Pigou thus took a much more balanced view than some of their strident successors (e.g. Walters 1998, Macrae 1999) who predicted that the introduction of the NMW would cause "mayhem" in the low paying sectors and that it was "utter nonsense" to argue that employment might not fall in such sectors.

The Fabian view of unemployment resulting from a minimum wage is rather interesting in that it was held to possibly be beneficial and once-and-for-all:

> *". . . instead of being deplored [it] should be welcomed. . . if some occupations were unable to bear the costs of a minimum wage it would obviously be a national benefit for them to disappear"* (p.7) . . . *"the destruction of trades which subsist only by sweating is one of the beneficent results which the minimum wage is expressly devised to accomplish . . . the loss of employment and the bankruptcy of the parasitic trades which the enactment of a Minimum Wage Law might involve would be blessings in a very thin disguise"* (pp.12, 13).

An identical argument is made today by many on the left (see section 5). And the Webbs (1897 p.780) likened any decline in the sweated trades due to them having to pay higher wages as equivalent to the consequences of a withdrawal of the then "bounty" on sugar production: "when the bounty is withdrawn . . . the available capital and labor is redistributed over the nation's industry in a more profitable way . . . The effective enforcement of a National Minimum of conditions of employment would be equivalent to a simple withdrawal of a bounty. We should, therefore, expect to see a shrinkage in these trades. But there would be at least a corresponding expansion in others".

The unemployed individuals would gradually decline in number through retirement, death or because they had been sent to "disciplined colonies . . . cured, reformed or trained as far as possible" (p.13). In the bulk of economic activity there would be no loss of jobs. Rather "there would be a gradual growth in the national dividend [income] arising from the greater power of production due to the increase in physical efficiency" (p.19).

e. Inspection and compliance

The Fabians believed that a strong inspectorate would cause most employers to abide by the proposed NMW. They argued that this was the case in Australia, except for the Chinese. Migrants were not thought to cause a special compliance problem although the life style of Jewish immigrants did not find favour. And in what can only be interpreted as either Fabian control and meddling tendencies or remarkable prescience, depending on

your viewpoint, the tract argued for the rigorous enforcement of similar labour standards abroad.

Inspection was held to be vital:

> *"That there would be a great deal of friction aroused by the minute inspection, especially of the wage books, required by the law, is highly probable . . . when the first horror of the shock caused by State interference in the cash nexus is over, the better employers will heartily welcome the means of ridding themselves of the competition of those who employ parasitic labour"* (p.18)

This belief that near full compliance was possible stemmed from studying state intervention in wage setting in Australia (Macrosty 1897) where it was stated that wage rates set by boards in, for example, "baking, clothing, boot making, shirt-making and the underclothes trade . . . have given general satisfaction" (p.7). But this was not so in the furniture trade where:

> *". . . certain sections are in the hands of the Chinese whose idea of honouring Factory Acts of this kind is to contravene them. Though collusion between Chinese masters and their Chinese workpeople to outwit the inspector in matters of wages and hours was glaringly obvious, the cunning of the yellow man was too often superior to that of the representative of the law when it became a question of securing legal proof that the regulations had been broken. . . the furniture trade suffers from the blight of yellow labor"* (pp.7, 8).

As always, the Fabians had a solution to this non-compliance:

> *"no provision appears to be made for punishing the men as well as the employers in a case of collusion"* (p.8).

This is certainly a novel suggestion: not only do you get a wage below the legal minimum, but you get punished as well! It is hard to think of many examples where such joining of the employer and worker in instances of non-compliance with regulations occurs. One example is in horseracing. If a trainer instructs the jockey that the horse is not to run on its merits – in order to set up a betting coup in a subsequent race – and the jockey complies with the instruction, the trainer, jockey and horse all suffer very severe penalties if the non-trier is spotted (HRA 2006, rules 155-157).

Presently the incidence of non-compliance is higher among migrant than local labour, especially migrants with poor English. Similarly, such migrants were commonly thought to contribute to the prevalence of sweating in the 1880s and 1890s. But the Fabians disagreed and produced statistics which "dispose of the idea that sweating can be prevented by prohibiting the immigration of pauper aliens" (Fabian Society 1894 p.6). Nevertheless they were concerned about:

> *"foreign paupers, especially Jews from the Polish districts of Russia, Germany and Austria. . . The evil effect of the Jew's occupation lies in the*

> *characteristics which render him a fit subject for the pestilential conditions of home-work: he overcrowds whole districts with his habit of living in misery; and his ingenuity has positively created or organised new industries to suit the circumstances"* (pp6, 7).

Essentially the Fabians were arguing that, though they did not care for the way of life of immigrant Jews, such workers were making the best of their circumstances with energy and ingenuity. The present debate concerning migrant labour from the EU accession countries, particularly the impact on wages, precisely mirrors this same debate a century ago.

Just as there is concern in the west today about some imports from Asia – where labour standards and regulations are held to be lower – so there was when the national minimum wage was first proposed:

> *"Under a Minimum Wage Law the manufacture of goods in England under sweated or parasitic conditions becomes unlawful, and by inference the sale of such goods ought to be made a breach of the law in the same sense as selling illicit whiskey. Therefore, it follows from a Minimum Wage Law that the importation of goods made under sweated conditions abroad must be prohibited. The difficulty of deciding what is the foreign equivalent of sweating, and the impossibility in many cases of tracing the foreign goods through all the processes of their manufacture, are obstacles to the complete enforcement of such regulations, but this is not sufficient reason for abandoning the attempt"* (p.18).

The Fabian proposal again parallels the debate a century later. Now, unions and employers argue for tariffs, quotas and boycotts of cheaper goods from countries where labour standards are either less rigorous than in the west or unenforced. Then, the Fabians wanted their inspectors in every corner of the globe on the pain of prohibiting imports produced by low paid labour. But, for once, they were less sanguine than usual that full enforcement of anti-sweating regulations was possible.

f. Interaction of NMW and the social security and tax system

Our present NMW interacts with the social security and tax system to simultaneously achieve two goals (Treasury 2006a). First, the NMW takes no account of family circumstances which, instead, are recognised through the system of tax credits. But, second, the NMW puts a floor on wages in order to limit the burden on the Exchequer of these credit payments. The Fabians similarly recognised that family circumstances differ and that Exchequer funds are limited.

Consider the discussion of widows with children (recall that the Fabian proposal was for a lower female than male NMW):

> *". . . in addition to doing her industrial work [she] has to be both father and mother to a family. . . A minimum wage alone cannot rescue her, though it alone can make her rescue possible. The only way of meeting her case is to give her, as a matter of right, sufficient existence from public funds to enable her . . . to make up her income to the standard of heads of families . . . Without such a [NMW] law, the widows allowance would be used to cheapen her labour"* (pp.10, 11).

Thus it was proposed that the social security system would, via the widows' allowance, top up the employment earnings. While our present tax credit system is better calibrated to particular family circumstances than a basic widow's allowance the principle is the same.

In the eighteenth century the system of alleviating poverty was largely based on *ad hoc* outdoor relief (although the system varied greatly by area) such that the parish provided extra income raised from local property tax. This was formalised somewhat by the spread of the Speenhamland (a parish in Berkshire) system after 1795 where out-relief was based on a declared scale that took account of the price of bread, the number of a man's dependents and his income. According to the Fabians the consequence of this system was that:

> *"Wages went down;outdoor relief went up; and employers got labour at the expense of rates"* (p.11).

Indeed the Webbs (1897 p.426) argued that "the employer is, in effect, receiving a bounty". This is confirmed by Hunt (1981) our leading labour historian of the period: "Employers, knowing the parish would provide the necessary supplement, were alleged to be progressively reducing wages, and thus accelerating the pauperisation of the labour force and leaving no place for the self-respecting labourer who was eager to work for a living wage" (p.132). The controversial 1834 Poor Law Reform Act largely replaced such outdoor relief by indoor relief, forcing the able-bodied poor into workhouses. The tract argues that, instead, the sensible social reform would have been to maintain outdoor relief but

> *". . . would have placed the workers behind the bulwark of a legal minimum wage"* (p.11).

The Fabian argument again anticipates one rationale advanced for the NMW in the 1990s. In the decade prior to the establishment of the Low Pay Commission wage inequality rose and, simultaneously, expenditure on tax credits (family credits and family income supplement) rose ten-fold. It was held that the Exchequer was subsidising employers through the provision of these in-work benefits and that such subsidies and the associated Exchequer burden would be constrained by the introduction of a NMW.

g. The NMW and the Living Wage

In London and various US cities (Gerther 2006) recent ordinances have established so-called living wages for city employees and contractors providing goods and services to the public authority. Typically the campaigns also target prominent private sector businesses, banks for example, to encourage or cajole them to also pay the living wage. The notion of a living wage is slippery. It takes no account of family circumstances, assumptions concerning benefits (e.g. tax credit, housing and council tax benefit) are often arbitrary, and normally a somewhat fanciful amount is added to raise the living wage above a poverty threshold wage. For example in London in 2006, after taking state benefits into account, the poverty threshold wage, based on living costs to support a low cost but acceptable living standard, is put at £6.16 an hour. Then an arbitrary 15% is added to produce a London living wage of £7.05 (see Greater London Authority 2006). The Church of England (Commission on Urban Life 2006) has also endorsed the living wage.

While the concept of a living wage is a bit fragile it has a long pedigree. Fair Wage Resolution (FWRs) were introduced in 1891 in an attempt to limit unfair competition for government contracts based on undercutting pay and terms of conditions of employment established by collective agreements (Metcalf 1981 chapter 5). As the 1906 Fabian tract put it:

> *"In spite of the protests of old-fashioned economists against the legal regulation of wages, the state, both central and municipal, has begun to act on the principle that no sweating or underpayment must be allowed in its direct or indirect service"* (p.3).

The document describes, for example, the operation of FWRs by the London County Council in the construction, tailoring and window cleaning occupations. Mayor Livingstone's London Living Wage is but an echo of distant municipal policy, although those workers benefiting from the present living wage resolutions are unlikely to suffer the offsets of their counterparts a century ago:

> *"the tailoring contractor to London County Council will pay the minimum rate for the Council work; but it is understood that the worker who is given a park-keepers' suit to make up is compelled to balance the advantage in wages accruing therefrom by taking a certain quantity of other work from her employer's private customers at a far lower rate of pay than the County Council's minimum"* (p.4).

Fair Wage Resolutions had solid foundations in that they used as their benchmark a wage set by collective bargaining. By contrast, the living wage is more subjective.

Neither the Webbs (1911 edition) nor the 1906 Fabian Tract believed that the minimum wage they were proposing was equivalent to a living wage. For the Webbs the minimum wage was based on:

> *"healthy subsistence . . . [it] would be determined by practical enquiry as to the cost of food, clothing and shelter physiologically necessary to prevent bodily deterioration. Such a minimum would be low . . . it would not at all correspond with the conception of a "Living Wage" formed by the cotton operatives or coalminers"* (p.775).

Similarly the 1906 tract suggested that the NMW be based on the subsistence needs of a family with three children.

The successful culmination of the campaign for a minimum wage, at least in the worst of the sweated industries, marked by the 1909 Trade Boards Act spurred on demands for a living wage. Philip Snowden MP wrote a whole book (1912) advocating state intervention to set a living wage yet he was nowhere prepared to define it. Rather a living wage "expresses a belief, a conviction, a demand . . . it is not to be expressed in concrete terms. It is not the Thirty Shillings a week which was demanded in the resolution moved in the House of Commons on 29 May 1911 on behalf of the Labour Party and the Trades Union Congress" (pp.3, 4). Although Snowden even quotes Pope Leo XIII as a supporter "who, by a Living Wage, meant sufficient to support a frugal and steady workman" he described any attempt at defining the idea as "futile, for no definition can meet one criticism without laying itself open to new ones" (p.5) but he did believe that it would "vary as between trade and trade, between locality and locality" (p.6). Essentially, then as now, the living wage is best viewed as a rallying cry to boost the pay of those towards the bottom of the wage league table. Indeed, in the end Snowden settled for the trade boards: "The most promising method of securing a living wage for all workers seems to be by the extension of the Trade Boards Act" (p.133). He certainly got his wish: by 1953 4 million workers, 1-in-5, were in sectors covered by the 66 Wages Councils (re-named ex-Trade Boards) plus the two agricultural wage boards. In the second half of the twentieth century these councils decayed and were finally abolished in 1993. But since the introduction of the NMW in 1999 history is repeating itself as local and sector campaigns are mounted for a living wage above the NMW.

7. Summary and Conclusions

British workers have now been covered by a NMW for eight years and the LPC is a decade old. It is a good time to evaluate the impact of the NMW on pay and employment because: 2006 was the centenary of the first call for a NMW; recent hikes in the NMW

exceed the growth in average pay; and the composition of the LPC is about to radically alter (section 1).

The NMW has raised the real and relative pay of low paid workers, tempered wage inequality and contributed to the narrowing of the gender wage gap. When it was first introduced in 1999 it covered around 1.2 million workers, but recent jumps in the NMW – above average earnings growth – mean that now some 2 million workers directly receive higher pay than they would have done without the NMW (section 2).

Standard economic theory posits that, given this impact on wages, employment will fall. The extent of any fall turns on the elasticity of the demand for labour with respect to the wage which depends on: the elasticity of substitution; the elasticity of demand for the product; labour costs in total costs; and the elasticity of supply of other factors. But employment falls may be tempered because of, *inter alia,* an uncovered sector, non-compliance, monopsony – labour market frictions, efficiency wage effects and offsets. There are sound theoretical reasons for analysing hours of work as well as employment . Employment effects of the NMW have been investigated by: examining aggregate employment and shares of employment by industry and age; individuals' employment experience; and employment changes across both geographic areas and firms (section 3).

Trends in aggregate employment and sector shares were unaffected by the introduction and uprating of the NMW. Similarly there is little or no evidence of employment effects in the many studies of individuals, areas and firms. But there is a suggestion of a modest impact on hours of work (section 4). This evidence points to Alan Walters writing "obvious nonsense" rather than those who were more sanguine and circumspect concerning employment effects.

Twelve possible reasons for small or non-existent employment effects of the NMW were examined (section 5). Two can definitely be ruled out: the NMW was not set below the previous competitive wage and coverage is virtually complete. Five possible explanations, in order of increasing likelihood are, first, for many workers a NMW job is a stepping stone to a higher wage more secure job. Second, employment effects may only emerge in the long run. Third, the employment effects of the larger relative rise in the NMW 2003-06 have, as yet, been insufficiently studied. Fourth, there is incomplete compliance with the NMW, the extent of which is unknown but is almost certainly growing. But for this non-compliance employment in the non-complying sector would be lower because some firms would close. Fifth, a key reason for this non-compliance is illegal collusion between the employer and worker to boost the amount of tax credit

received by an individual worker – an offset to the cost of the NMW courtesy of the exchequer.

The five most probable explanations concern the productivity-prices-profits nexus, hours reductions and labour market frictions. There is (weak) evidence that some firms affected by the NMW intensified effort, altered work organisation and raised their investment in human capital. Where labour costs increased some of this increase was passed on via higher prices: the relative price of minimum wage-produced consumer services rose relative to the RPI. Profits in firms employing low wage workers fell relative to other firms and at macro level the share of profit in national income has been lower since the NMW than its average since 1980. Profits took some of the strain. Next, there is some evidence that firms adjusted hours rather than workers. Finally labour market frictions – imperfect information, mobility costs and tastes – give the employer some market power which implies a NMW does not automatically reduce employment

A remarkable, and sadly neglected, Fabian tract proposed a NMW in 1906. This brief document covered most of the issues analysed here including pay setting; competitive versus monopsonistic approaches to employment levels; compliance including the matter of labour standards abroad; and the interaction between the NMW and the social security system. It was also a creature of its time: it advocated a higher NMW for men than for women; it expressed tart views on Chinese and Jewish workers and employers; and it suggested that some unemployment resulting from a NMW would be beneficial (section 6).

The NMW has had an important impact on the distribution of pay and national income (equity) without offsetting adverse employment effects (efficiency). Consider the D50/D10 wage differential. It was shown in section 2 that since 1999 the NMW alone has reversed half the growth in inequality that occurred in the previous two decades. This is a remarkable achievement because there are so many forces working in the opposite direction to increase wage inequality. These include the huge increase in the supply of less skilled labour caused by immigration, declining trade union density and collective bargaining coverage and greater use of performance related pay. The NMW has directly cut the D50/D10 differential by 5 percentage points. Immigration, waning union influence and altered payment systems would have increased the D50/D10 differential by at least 4 percentage points since 1999 but for the NMW. Thus the total impact of the NMW on D50/D10 is some 9 points – a very large effect. In addition the NMW is associated with a declining share of profit in national income and a corresponding rise in labour's share. Bank of England data show that since the introduction of the NMW the share of profits in national income has always been below its historic average since 1980.

It seems safe to conclude that the LPC, via its evidence-based approach advocated in the Fabian tract a century ago, has raised the real and relative wage of low paid workers without adverse employment consequences. The NMW has, as Spender (1912) pleaded, finally set a Plimsoll line for labour.[10]

[10] Samuel Plimsoll proposed a loading line on ships above which a hull must not be allowed to submerge at the dock. This was made compulsory in the 1876 Merchant Shipping Act. Before then many "coffin ships" were over insured and overloaded and regularly sank at sea. For a riveting biography of Samuel Plimsoll see Jones (2006).

Table 1
Increase in hourly earnings at time of introduction of National Minimum Wage

All aged 22 plus who remained in same job	Median earnings October 1998 £	Median earnings October 1999 £
Earning less than £3.60 in 1998	3.16	3.65
Earning £3.60 or more in 1998	7.36	7.70

Source: LPC (2001 table 3.3) using British Household Panel Survey data 1998, 1999.

Table 2
NMW bite and the gender pay gap

			Adult NMW as a percentage of gross hourly earnings excluding overtime for all aged 18 and over				Gender pay gap for full-time employees (female hourly earnings as a percentage of male hourly earnings)	
	Date (April)	**Adult NMW**	**Lowest decile**	**Lowest quartile**	**Median**	**Mean**	**Median**	**Mean**
ASHE without supplementary information	1998	na					16.4	20.4
	1999	£3.60	87.0	68.3	47.6	36.7	15.7	19.7
	2000	£3.60	83.3	65.7	46.2	35.3	13.8	19.0
	2001	£3.70	82.2	64.8	45.2	34.2	14.0	19.0
	2002	£4.10	86.7	69.0	48.1	36.0	13.5	19.2
	2003	£4.20	84.0	67.5	47.5	35.7	12.7	18.7
	2004	£4.50	87.2	69.4	48.5	36.7	12.1	17.1
ASHE with supplementary information	2004	£4.50	87.5	70.0	49.0	37.4	12.2	16.7
	2005	£4.85	91.0	72.9	51.1	38.6	11.1	16.5
	2006	£5.05	91.2	72.8	51.1	38.6	10.8	16.8
Predicted bite	2007	£5.35	92.8	74.4	52.1	39.3	-	-

Source: ONS, Annual Survey of Hours and Earnings (ASHE) without supplementary information, 1998-2004, ASHE with supplementary information, 2004-6. Notes: (i) There is a change of definition in ASHE in 2004 which improved the coverage of low paid workers. (ii) The data for 2007 assume that lowest decile, lowest quartile, median and mean hourly earnings grow by the average earnings forecasted by the Treasury Panel of Independent Forecasts, viz 4.2%. (iii) The gender pay gap data refer to workers on adult rates whose pay was not affected by absence.

Table 3
Uprated value of the introductory adult NMW: actual NMW compared to what it might have been

Figures in £ per hour	AEI (including bonuses)	AEI (excluding bonuses)	RPI	RPIX	CPI	Actual NMW
April 1999	3.60	3.60	3.60	3.60	3.60	3.60
October 2000	3.85	3.83	3.76	3.73	3.66	3.70
October 2001	4.03	4.03	3.83	3.82	3.71	4.10
October 2002	4.18	4.18	3.88	3.89	3.75	4.20
October 2003	4.34	4.33	4.00	4.00	3.80	4.50
October 2004	4.50	4.52	4.12	4.09	3.85	4.85
October 2005	4.69	4.69	4.24	4.18	3.94	5.05
October 2006	4.88	4.86	4.34	4.28	4.02	5.35

Source: ONS. The Adult NMW uprated using various quarterly measures of average earnings (GB) and prices (UK). AEI including bonuses (ONS code LNMQ) and excluding bonuses (ONS code JQDW); RPI (ONS code CHAW), RPIX (ONS code CHMK) and CPI (ONS code D7BT).

Table 4
Total GB employee jobs and employee jobs in low paying sectors 1999-2006

Sector	Employee jobs March 1999 (thousands)	Employee jobs March 2006 (thousands)	Absolute change in number of jobs 1999-2006 (thousands)	% share 1999	% share 2006
All	24,206	25,918	1,712	100	100
All low paying sectors below	6,311	6,698	387	26.1	25.9
Retail	2,525	2,818	293	10.4	10.9
Hospitality	1,557	1,743	186	6.4	6.7
Social care	973	1,101	128	4.0	4.2
Cleaning	435	434	-1	1.7	1.7
Agriculture	271	204	-67	1.1	0.8
Security	128	158	30	0.5	0.6
Textile, clothing, footwear	306	127	-179	1.3	0.5
Hairdressing	98	112	14	0.4	0.4

Notes:

a. Data are quarterly, not seasonally adjusted. They are collected from employer records and therefore include multiple job holding.

b. The social care sector covers both residential social care and non-residential social care.

c. It should be noted that the employee jobs series produces a higher employment figure than the corresponding Labour Force Survey figure because the LFS does not account for temporary foreign workers, some armed forces, workers living in communal establishments and third and subsequent employee jobs; the LFS also has some non-response and proxy response errors (see Walling and Heap 2006).

Sources:

Office for National Statistics, Employee Jobs Series, Great Britain.

Table 5
Introduction of the National Minimum Wage 1999: employment effects

Author	Unit of observation etc	Data	Employment indicator	Wage indicator	Control variables	Results
Stewart (2004a)	individuals UK	• Labour Force Survey (matched) n=54165 • BHPS 1994-99 n= 16796 • New Earnings Survey 1994-99 n=537,697	Employment probabilities • difference-in-difference • wage gap	hourly pay • LFS weekly gross ÷ actual hours or usual hours • BHPS weekly gross ÷ normal hours • NES hourly pay calculated excluding overtime hours and earnings	• LFS/BHPS age completed highest qual lm experience current tenure PT/FT marital status ethnic status perm/temp job public/private health problems real hourly wage region yr/month • NES fewer controls	• difference-in-difference "insignificantly different from zero in all four demographic groups (male and female adults and youths) and all three datasets" • wage gap implied elasticities (all ns)
						Adult men / Young men / Adult women / Young women LFS .005 .047 -.003 .038 BHPS .026 - .024 - NES .005 .004 -.001 .036
Stewart & Swaffield (2004)	individuals UK aged 22-64	• LFS 1997-2000 n= approx 21000 • NES 1994-2000 n= approx 190,000	• basic hours • total hours	Hourly pay as Stewart (2004a) above	• LFS year, month region FT/PT tenure marital status ethnic group public/private health lm exp education • NES year, month region FT/PT tenure	re total effect i.e. initial plus lagged NES redn. In both basic and total hours of 1-2 per week LFS higher than cut of 1-2 re men, lower re women "MW led to a reduction in paid working hours of both male and female low wage workers"

Connolly & Gregory (2002)	individual women aged 22-59 UK	• BHPS 1994-2000 n=2000-2600 pa • NES Panel 1999-2001 n=5600-63000 pa	average hours • difference-in-difference BHPS • basic hours • actual hours NES • actual hours	hourly pay as Stewart (2004a) above	• NES age real wage job mobility occupation • BHPS NES plus ed quals demographics	both with / without controls • no sig. difference between the groups • but 3 year effect more negative than 1 year (albeit ns)
Robinson & Wadsworth (2005)	individuals UK	• LFS approx 22000 individuals of whom treatment plus control =3600 1998-99	• probability of second job holding • hours of work - first job - second job	hourly pay weekly pay ÷ actual hours - below NMW - wage gap	industry marital status ethnicity perm/temp firm size job tenure age/no. of kids	• no significant impact on change in probability of second job holding for those initially below NMW cf control group • for workers with 2 jobs in 1998: little affect on hours worked in second or main job
Stewart (2002)	140 areas of GB	• Pay New Earnings Survey (NES) • Employment LFS Annual Business Inquiry NES sample varies from - areas 140 - individuals 789,141	• regression change in employment as function of % of workers below minimum • difference-in-difference compare employment changes in high wage and low wage areas of country both above done using data at level of - area - individual		when individual data: age gender PT/FT %<12 months	• virtually all estimates ns • e.g. even when focus on high risk groups like youths, women and unskilled "all estimates [of the employment effects] at both area and individual level are insignificant and the great majority are positive"
Galindo-Rueda and Pereira (2004)		459 areas 8 low wage sectors 1997-2001	• net change in number of establishments • employment change	propn paid below initial NMW in 1998 in area/sector	sector district year	• all sectors except textiles had net increases in no. of estabs and employment • but such growth lower in areas where NMW had higher bite

<table>
<tr>
<td>Machin, Manning & Rahman (2003)</td>
<td>Firms</td>
<td>575 care homes</td>
<td>• probability of closure 98/01
• change in employment 98/99
• change in total hours 98/99</td>
<td>• propn paid below NMW
ave=32.3%
• wage gap of care home
ave=3.9%</td>
<td>% female
% nurse qual.
avg age
change occupancy rate
% LA residents
County/month</td>
<td>• no correlation between impact of NMW and probability of home closure
• impact of 1% change in NMW in range 360p to 400p
<table>
<tr><th>wage indicator</th><th>change in employment</th><th>change in total hours</th></tr>
<tr><td>- initial % below NMW</td><td>-.13</td><td>-.39</td></tr>
<tr><td>- wage gap</td><td>-.29</td><td>-.25 (ns)</td></tr>
</table>
</td>
</tr>
<tr>
<td>Draca et al. (2005)</td>
<td>Firms</td>
<td>FAME
2268 firms</td>
<td>• probability of closure 1999-2002
• employment change 1999-2002</td>
<td>Low wage firm
cf
middle wage firm</td>
<td>industry
region
k: sales
firm age
education
% union
% PT
% female</td>
<td>no correlation between impact of NMW on labour costs and
• exit rate 1999-2002
• employment change 1999-2002</td>
</tr>
</table>

Table 6
Uprating of National Minimum Wage: employment effects

Author	Unit of observation etc	Data	Employment indicator	Wage indicator	Control variables	Result
Stewart (2004b)	upratings • 2000 • 2001 individuals UK	Matched Labour Force Survey 2000 n=51880 2001 n=37287	Employment probability difference-in-difference	Hourly pay Weekly gross ÷ actual hours or usual hours	as Stewart (2004a)	• all estimates insignificantly different from zero • most estimates positive
Dickens & Draca (2005)	uprating 2003 individuals UK	Matched Labour Force Survey April-Sept 2003 cf Oct 03-Mar 04	Difference-in-difference • employment retentions • employment inflows	Actual hourly pay (preferred) also as Stewart above (not preferred)	similar to Stewart (2004a)	• employment retention - all adults treatment group retention rate cut from 93% to 91% by uprating ns (t=0.94) - separate adult M/F, all /youths all ns, most close to zero • job entry no significant difference between control/treatment groups
Jones et al (2006)	1999-2005	ASHE panel approx 135000 individuals 1 year transitions (e.g. 99/00, 04/05)	exit from employment	not low paid low paid (defined as at or below NMW)	-	exits risen monotonically 1999-2005 exits absolutely higher for low paid increase in exits higher for not low paid
Machin & Wilson (2004)	Firms 2001 uprating	180 care homes south coast	change in employment 2001/2	• propn paid below new NMW • wage gap	% female % nurse qual. Ave age % LA residents county	10% increase in → change in employment - initial % below NMW → -.042 (ns) - wage gap → -.783 (ns)
Mason et al. (2006)	2003 uprating	17067 small businesses	anticipated response to 2003 uprating • 5-point scale 1 (significant decrease) to 5 (significant increase) • 3 – no change		region	item → mean scores employment 2.94 basic hours 2.92 overtime hours 2.90
Metcalf (this paper)	1998-2004	1126 private sector workplaces WERS panel	change in employment	% workforce below £3.50 in 1998	-	no association re • closure rates • change in employment

Experian (2006)	1995-2004	retail/hospitality 110 observations by region ASHE (pay) ONS employment (jobs)	change in employ in region relative to UK	increase in wage bill in region relative to UK	region industry	• retail : no association • hospitality : negative association by small elasticity -.04

Table 7
Employment change 1998-2004 by percent of workforce earning below £3.50 per hour in 1998

Percent of 1998 workforce earning below £3.50		Employment change 1998 – 2004 (%)						
		Closed down	more than -25	-5 to -25	+ - 4.9	+ 5 to + 25	more than +25	Total
Zero	n	156	158	89	47	82	138	670
	%	23.3	23.5	13.3	7.0	12.2	20.6	100
0.1 to 5.0	n	30	55	26	11	26	39	187
	%	16.0	29.4	13.9	5.9	13.9	20.9	100
5.01 to 25.0	n	25	34	22	11	29	34	155
	%	16.1	21.9	14.2	7.1	18.7	21.9	100
25.01 +	n	24	23	22	10	9	26	114
	%	21.1	20.2	19.3	8.8	7.9	22.8	100
Total	n	235	270	159	79	146	237	1126
	%	20.9	24.0	14.1	7.0	13.0	21.0	100

Notes:

(i) The top entry in a cell is the number of workplaces and the second is the row percentage. For example of 114 workplaces with more than 25% of employees paid below £3.50 in 1998, 24 closed down between 1998 and 2004, equivalent to 21.2% of this group.

(ii) Sample is workplaces that had 10 or more employees in 1998 and were in the private sector.

Source: Workplace Employment Relations Survey Panel 1998-2004, available from www.data-archive.ac.uk study number 5294.

Table 8
Impact of NMW on productivity

Author	Sample	Method	Definition of productivity	Controls	Result
Forth and O'Mahony (2003)	• 183 industries • 7 low paying industries 1998-2000 cf 1995-1998	• wage bill impact of NMW cf productivity change • productivity change in each case cf before/after introduction of NMW	• gross real value added per hour • sometimes disagg to - K:L ratio - TFP	skill mix	• +ve ns correlation between wage bill (bite) impact of NMW and growth in labour productivity • correlation stronger 1995-98 than 1998-2000 but never significant • similar findings for TFP and K:L ratio • evidence of acceleration in labour productivity growth in textiles, security and hairdressing post 1998 but not in other low paying sectors
Draca et al. (2006)	378 UK firms over 6 years 2268 observations FAME data	difference-in-difference cf "policy on" (1999-2002) with "policy off" (1996-99) cf low wage firms with higher wage firms	sales/employment	industry (1-digit) region capital:sales ratio % graduates % union, %IT, % female by 3-digit industry	during "policy on" the gain in productivity was 5.4% higher in the treatment than in the control group, but ns
Galindo-Ruedo and Pereira (2004)	matched • firms from Annual Business Inquiry • workers from NES • manufacturing: approx 800 firms 1994-2001, 6000 observations • services approx 800 firms 1999-2001, 3000 observations	difference-in-difference • treatment group - services: at least 30% of workers paid < £4 hour 1998, = 16% of sample - mfc: at least 5% of workers paid < £4 hour 1998 = 16% of sample • control group: other firms analyse how productivity measure alters at time of introduction of NMW	• labour productivity gross output/employment • total factor productivity	3-digit industry dummy firm dummy	• labour productivity relative increase of 11% in treatment group cf control group • tfp no associations

Galindo-Ruedo and Pereira (2004)	matched • firms from Annual Business Inquiry • industry/region cell from NES • services, approx 5600 firms in treatment 5000 firms in control 20,000 observations • production, approx 1000 firms in treatment 8600 in control 32000 observations	difference-in-difference • treatment group firms must be in industry/region cell where at least 10% of 1998 workers paid < NMW times(1.05) • control group: other firms	gross output/employment	firm fixed effect	• services increase of 6-17% at intro of NMW • production no association
Machin et al (2003)	486-586 UK care homes	difference-in-difference introduction of NMW cf across homes according to • initial fraction < NMW • initial wage gap	• residents per worker hour • change in worker effort because of NMW	% female % nursing qualification % care assistants average age occupancy rate % paid for by LA county response month	all associations + ve e.g. 10% increase in wage gap linked to 9% increase in effort but none significant
Georgiadis (2006)	135-183 south coast care homes	difference-in-difference introduction / 2001 uprating • initial fraction < NMW • initial wage gap	• no. of beds per employee/hour • no. of residents per employee/hour • ratio of employees with/without nursing quals • worker effort • supervision intensity	% female % nursing qualification % care assistants average age occupancy rate % paid for by LA country response month	all associations ns except -ve association between wage gap and supervision intensity

Arulampalam et al (2004)	approx 2500 workers aged 18-60 BHPS 1998 wave 8 2000 wave 10	difference-in-difference • training in 18 months prior to/after introduction of NMW • treatment group: workers initially below NMW • control group: workers initially at NMW and up to 15% above it	change in • incidence of training • intensity (days) of training	age PT fixed/temp job changed employer marital status union sector firm size 1-digit industry local unemployment rate	• raw • difference-in-difference cf treatment and control - training probability increased by 8-11% points (sig) - training days increased by 10% points (sig)
Dickerson (2006)	approx 49,000 workers aged 18-60 LFS 1998, 2000	difference-in-difference • training prior to / after intro of NMW • treatment and controls as in Arulampalam et al. (2004)	change in receipt of training in • last week • last 4 weeks • last 13 weeks	experience tenure public sector ethnic group industry occupation estab. Size PT/FT region	• 3 training defns, 4 groups of workers • 9 out of 12 coefficients + ve all ns

	incidence	intensity (days)
treatment	.10 to .17	2.3 to 6.5
control	.28 to .30	5.0 to 4.9

Table 9
Relative price changes of NMW-produced consumer services

Consumer service	% paid at or below NMW 1998-99	% point price rise relative to RPI	own-price elasticity of demand	% of total expenditure accounted for by NMW households
	1	2	3	4
All NMW services	-	0.8*	-	-
Home cleaning	36.6	2.2*	+0.36	2.8
Road travel, minicabs	54.2	1.5*	-0.83*	16.0
Hotels	28.7	1.4*	+0.75	8.2
Canteen meals	34.1	0.7*	-2.77*	17.4
Takeaway food	57.8	0.4*	-0.95*	17.2
Pub drinks	52.8	0.2	-2.61*	17.7
Restaurant meals	41.1	0.2	-0.34*	12.4
Dry cleaning, laundry	28.0	0.2	-2.67*	7.0
Hairdressing services	39.3	0.1	-0.19	9.2

Notes:

1. Column 1 from LFS. Wadsworth ranked the sectors according to incidence of low pay in 1998-99. Industrial cleaning was also in the top 10 sectors but omitted from the analysis in order to focus on consumer services. Care homes do not appear in this list because there is no price index for care homes.

2. Column 2 from Family Expenditure Survey (monthly observations, annual inflation rate). Difference-in-difference estimate pre- (January 1997 to March 1999) and post- (April 1999 to December 2005) NMW; control item is RPI. * means significant at, at least 5%.

3. Column 3 is from FES: own-price elasticity derived from regression of budget share on log of own-price index for each month January 1996 to December 2005. * means significant at at least 5%.

4. Column 4: there are 11.6% NMW households in the FES sample. They spend disproportionately more on some items e.g. canteen meals and disproportionately less on other items e.g. home cleaning.

Source: Wadsworth (2007).

Table 10
Impact of NMW on profit margins

	Representative sample of UK firms	Care home sector
Author	Draca et al. (2006)	Draca et al. (2006)
Sample	firms registered in UK • balanced panel, 342 firms, 2052 observations • unbalanced panel, approx 700 firms, 3820 observations	469 residential homes
Method	Difference-in-difference cf "policy-on" (1999 – 2002) with "policy-off" (1996 – 1999) cf low wage firms with higher wage firms	Difference-in-difference cf "policy-on" (1999 – 2000) with "policy-off" (1998 – 99) cf homes where pre-NMW wage very low with homes already at or near NMW
Definitions		
Pay	cf low average wage (<£12k pa) with higher average wage (12k - £20k pa) firms	Wage gap i.e. by how much pay must increase to fulfil NMW
Profit	Gross profit (prior to deductions for tax, interest and dividends) as fraction of turnover (sales)	• total revenue – total costs = gross profit • profit margin = gross profit / revenue
Controls	industry (1-digit) region firm age capital – sales ratio % graduates % union, % IT, % female by 3-digit SIC	% female % with nursing qualification mean age % local authority residents county, time
Results		
Pay	change in average wage 1996 – 2001 % higher wage firms 12 low wage firms 21	• 38% of workers paid < NMW "pre" • 31% of workers paid = NMW "post" • pay rose most the larger the initial wage gap
Profit margin	low wage cf high wage firms: profit margin cf post period with pre-period low wage firms, down by .021 high wage firms up by .006 so difference-in-difference = -.027 (or with controls -.031 to -.042) original profit margin .400 so profit margin fell by 8% to 11%	mean wage gap .04 elasticity of profit margin wrt wage gap -.60 so average firm facing reduction in profit margin of .024 initial profit margin .102 so profit margin down by 23%

Notes: There is a (small) problem concerning the calculation of profits for the care home sample. Profits are defined as total revenue minus total cost. Total cost is calculated: (wage bill / labour cost share in total cost). An increase in the NMW will tend to increase both the numerator and denominator of total cost. But if such an increase in the NMW raises the wage bill proportionately more than the fraction labour costs are in total costs then total costs automatically rise and profits fall correspondingly. I have worked through some arithmetical examples and this bias is probably not large.

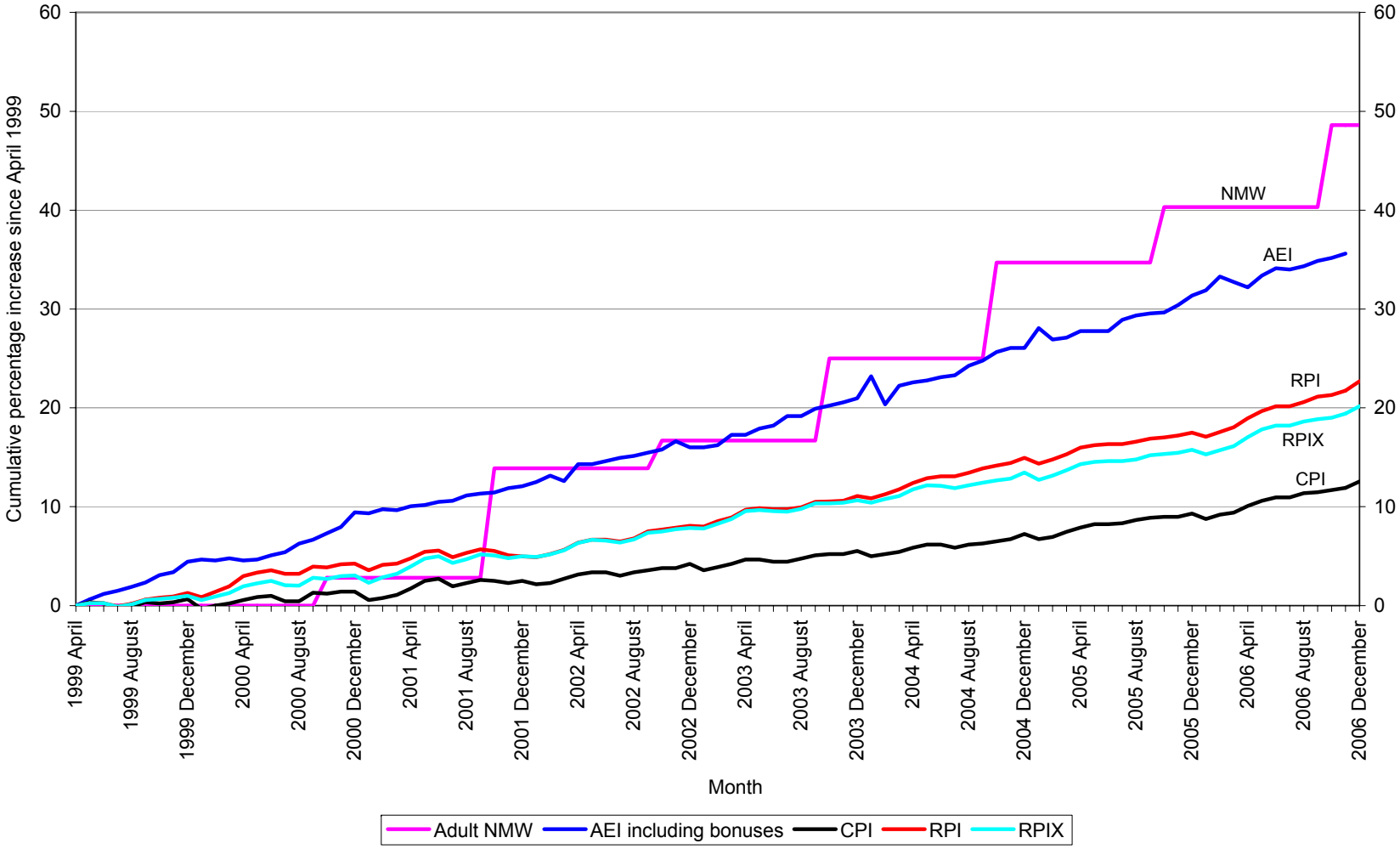
Table 11
Profit and wage shares in national income (%)

	Gross operating surplus, all companies as share of total GDP	Gross operating surplus of non-financial corporations as share of private GDP	Compensation of employees as share of GDP	Compensation of employees plus social security contributions as share of total GDP
	ONS	ONS	ONS	EU
1997	24.2	26.0	53.0	70.4
1999	23.4	24.3	54.2	71.8
2005	22.3	23.5	55.9	73.0

Notes:
Although these are all official data they need to be treated carefully. For example profits are measured gross, not net of depreciation. Column 1 does not correct for self-employment or the size of the public sector. The ONS codes are IHXM/YBHA. Column 2 excludes financial companies from the numerator, but includes them in the denominator. It nets out the public sector but does not correct for self employment. The ONS codes are CAER / (YBHA minus NMRP). Column 3 takes compensation of workers including social security contributions as a percent of GDP. It does not correct for the size of public sector employment or self employment. The ONS codes are IHXP/YBHA. Column 4 is all on a per employee basis. The numerator is pay plus social security contributions. It also takes account of self employed workers and imputes their average wage. The denominator is GDP at factor cost.

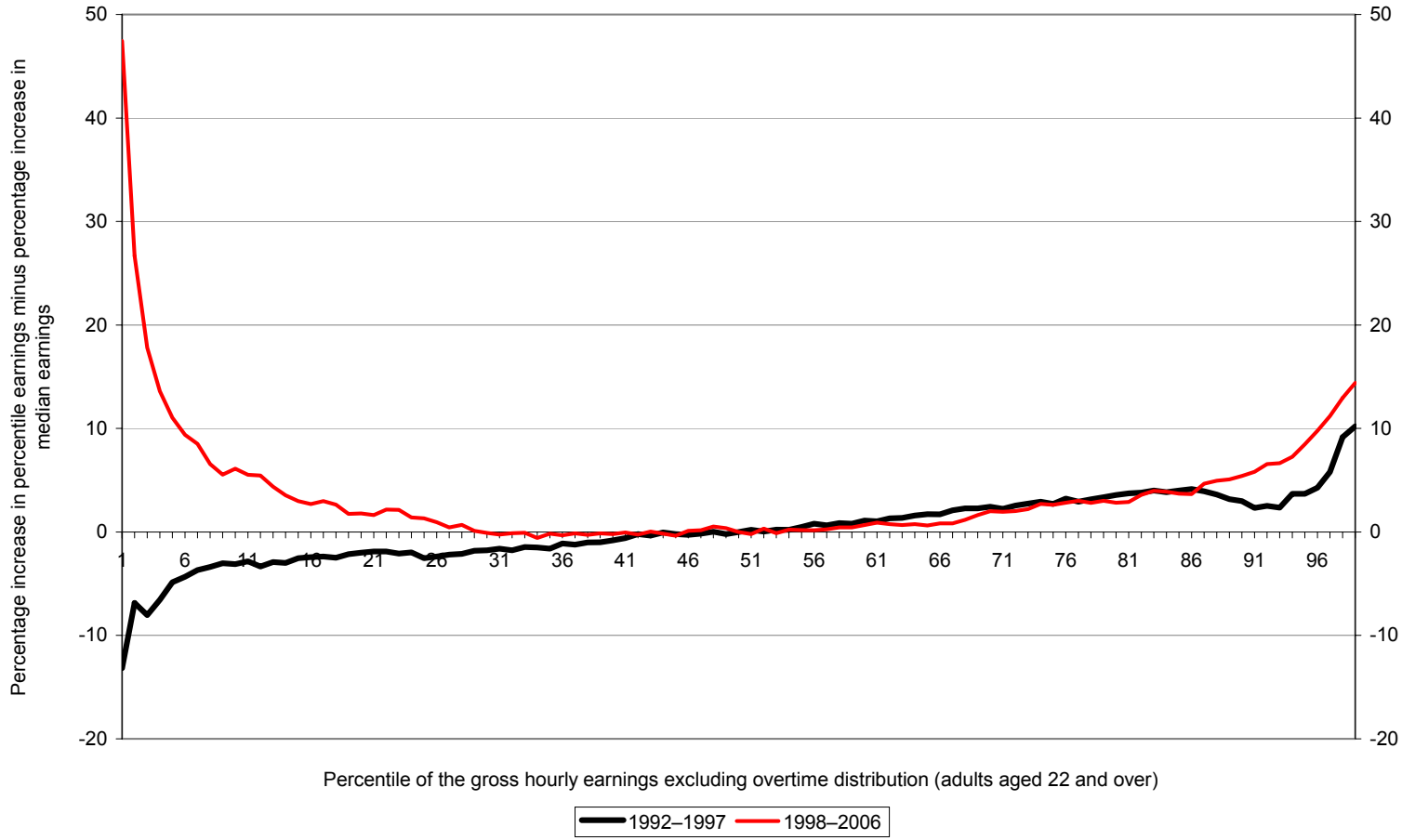
Sources:
Office of National Statistics: profitability@ons.gov.uk; European Commission, *European Economy* Directorate-General for Economic and Financial Affairs, 2004, No.4, table 32.

Figure 1
Increase in adult NMW compared with movements in earnings and prices



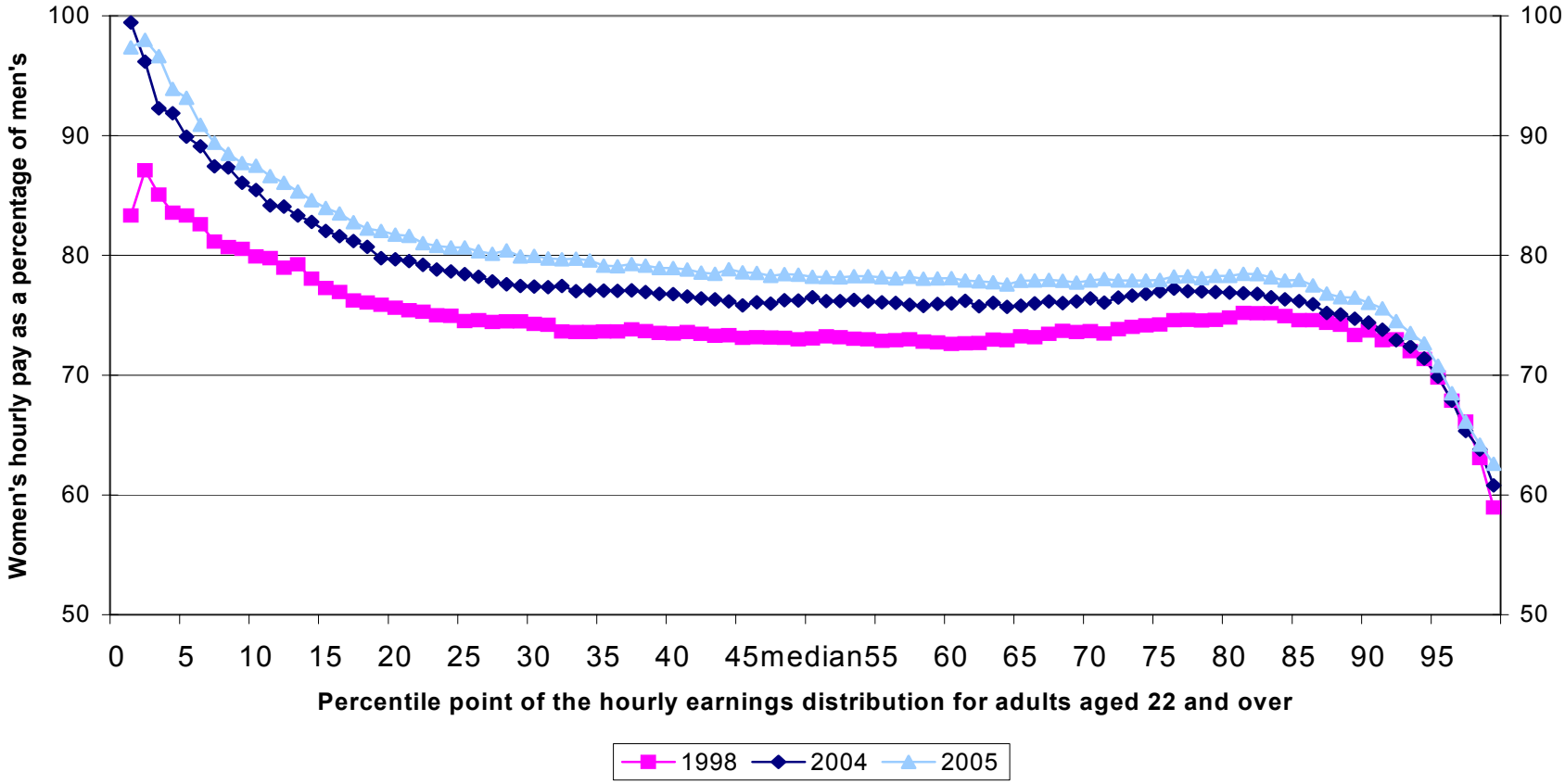
Source: ONS. The Adult NMW uprated using various quarterly measures of average earnings (GB) and prices (UK). AEI including bonuses (ONS code LNMQ), RPI (ONS code CHAW), RPIX (ONS coke CHMK) and CPI (ONS code D7BT).

Figure 2
Earnings growth 1992–2006
Increase in Hourly earnings Minus the Increase in Median Earnings by Percentile for Employees Aged 22 and Over, UK, 1992-2006



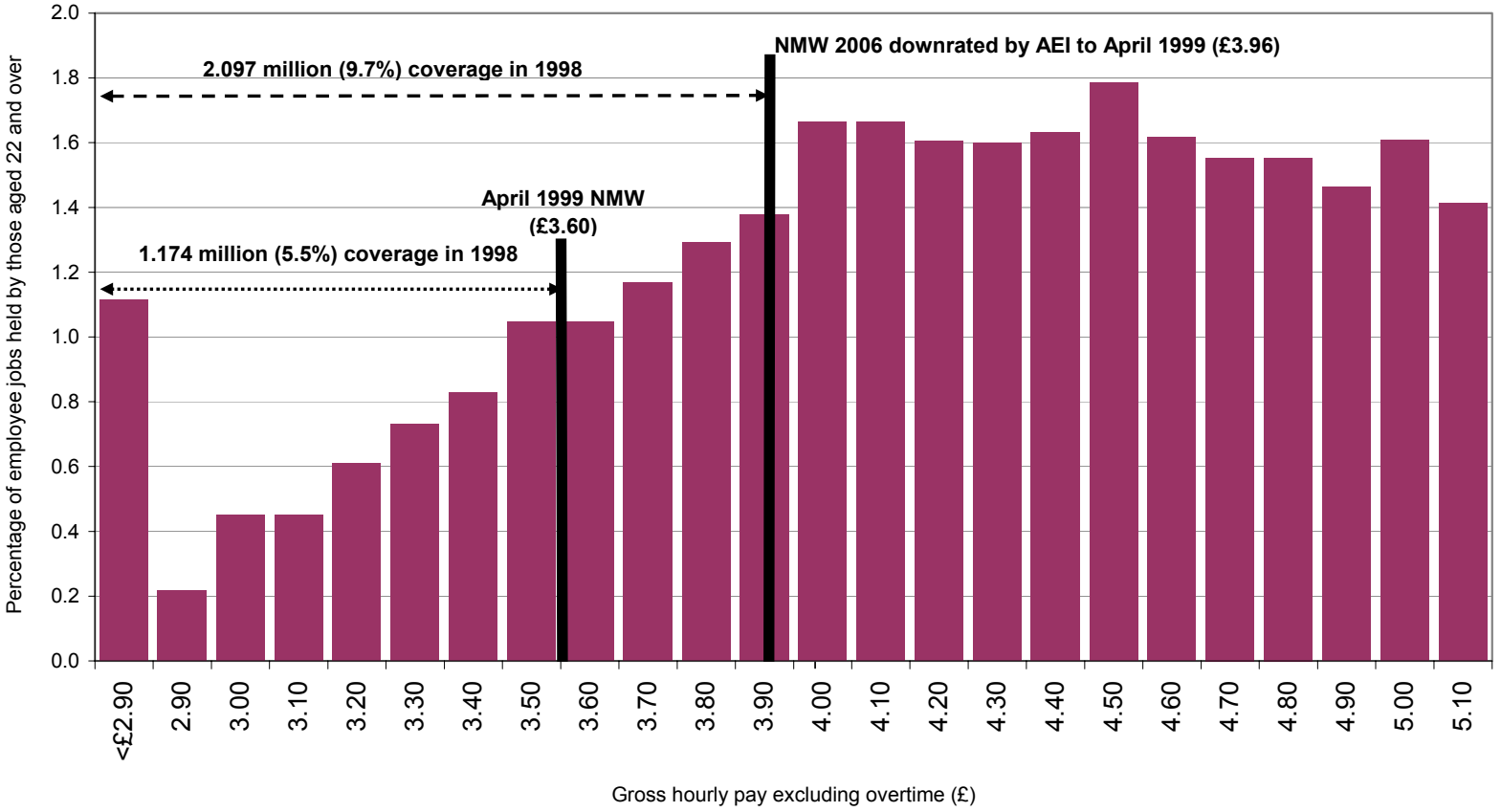
Source: ONS, New Earnings Survey 1992-1997; Annual Survey of Hours and Earnings (ASHE) without supplementary information, 1998 and ASHE with supplementary information, 2006. Gross hourly earnings excluding overtime. There is a small change of definition in ASHE in 2004 so comparisons using identical data definitions between 1998 and 2006 are not possible. We make such a comparison for illustrative purposes.

Figure 3
Gender pay ratio by percentile, 1998-2005
Female hourly earnings as a percentage of male hourly earnings by percentile for adults aged 22 and over, UK, 1998-2005



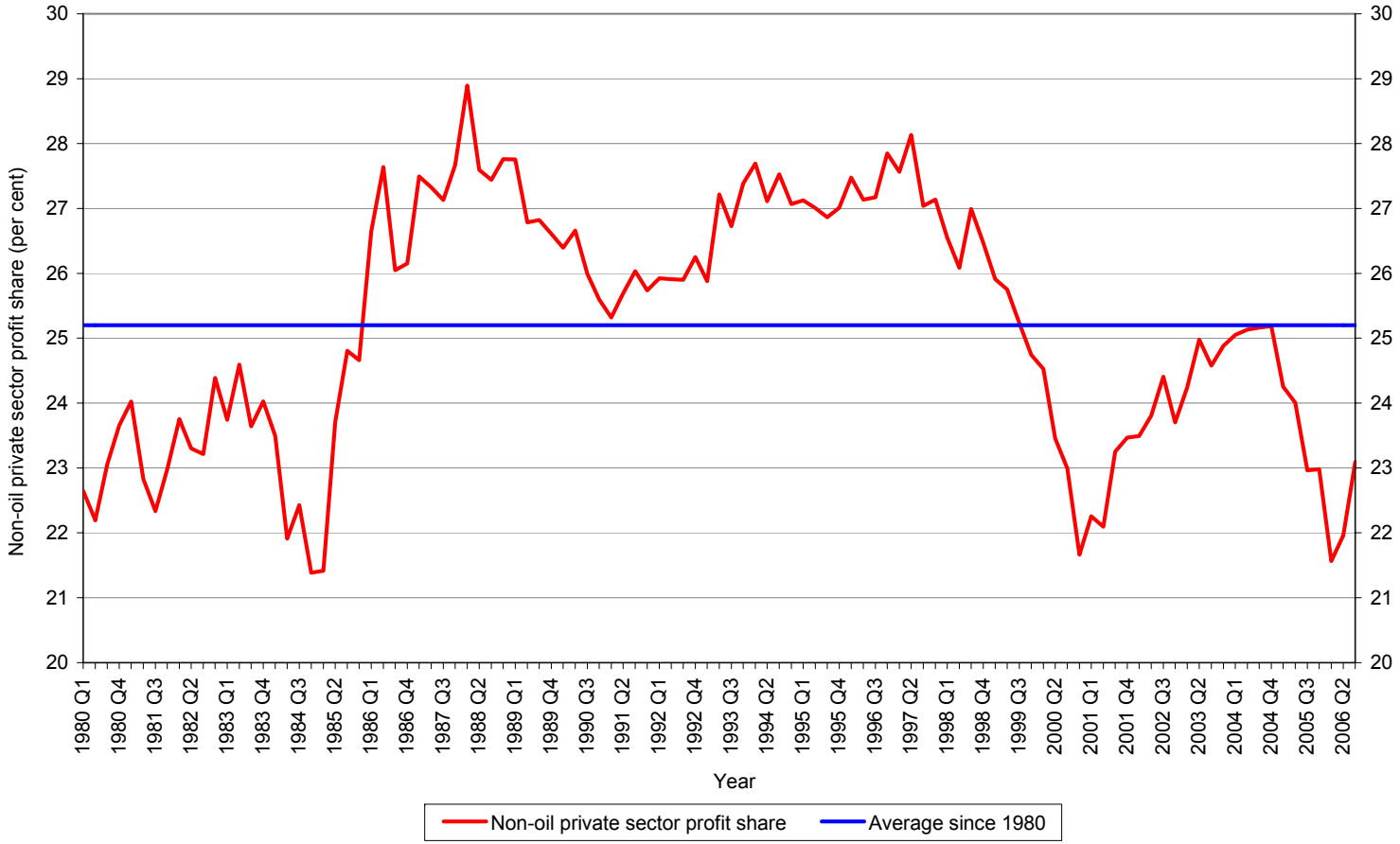
Source: ONS. ASHE without supplementary information, 1998 and 2004. ASHE with supplementary information, 2005. Gross hourly earnings excluding overtime. There is a change of definition in ASHE in 2004 so comparisons using identical data definitions between 1998 and 2005 using ASHE are not possible. We make such a comparison for illustrative purposes only.

Figure 4
Gross hourly earnings excluding overtime distribution for adults aged 22 and over, UK, Spring 1998



Notes and Sources: LFS and ASHE Central Estimate, Spring 1998. Growth in AEI (including bonuses) between April 1999 and October 2006 was 35.1%. Thus the October 2006 NMW of £5.35 downrated by AEI to April 1999 is £3.96.

Figure 5
Non-oil private sector profit share
percentage of non-oil private sector final output



Note: Final output is defined as gross value added of the non-oil and gas private sector plus intermediate inputs. Profits defined as final output minus employment compensation, intermediate inputs and alignment adjustments.

Source: Bank of England, *Inflation Report*, November 2006, chart B.

APPENDIX. Impact on the income distribution

The distributional affect of the NMW by household income depends crucially on two factors. First, the sample of households chosen e.g. all households, working age households, working age households with at least one person in work. Second, whether or not alterations in income resulting from offsetting benefit reductions and/or tax increases are taken into account. It is surely sensible to focus mainly on the income distribution among working families because, by definition, the NMW cannot influence the household income in those households where no one is in a job. Similarly, the NMW influences the earnings coming into the household but this, in turn, affects tax and national insurance liabilities and benefits received including tax credits and housing benefits. It is therefore appropriate to take marginal deduction rates into account when analysing the impact of the NMW on the household income distribution.

The Institute for Fiscal Studies modelled the distributional impact of the 2003 NMW uprating from £4.20 to £4.50 using the Family Resources Survey, see table A.1. Column 2 reports the impact across all families while column 3 concentrates solely on working families. The marginal deduction rates are applied in both cases. When the sample is all families the percentage gaining in each income decile is an inverted-U shape. This is because many of the poorest families are pensioners or unemployed who will not gain from the NMW. Instead, the gainers tend to be concentrated in deciles 3-6. The top quintile of the distribution also has relatively few households which stand to gain from the NMW.

Now focus instead just on the working households in column 3. For this sample the picture is entirely different. A quarter of households in the bottom quintile gain from the NMW and this fraction falls monotonically such that only 1-family-in-25 in the top quintile gain. Other actual or hypothetical increases in the NMW have been modelled by Bryan and Taylor (2004) using BHPS and the Treasury (2005, 2006b) using their model. Reassuringly, the pattern of results is very similar in each case.

It is not just the percentage of households in each income decile that gain that matters. We should also consider by how much their income goes up. The Treasury (2006b) modelled this for working households, taking account of marginal deduction rates, for a hypothetical increase of 25p in the NMW in 2007 (i.e. from £5.35 to a notional £5.60). The average gain – for the 2.3m (9.3%) households that have any gain – is £4.50 a week. But those in the top half of the income distribution, gain absolutely more than this while those families in the bottom 40% gain less. There are three reasons for this. First, many

beneficiaries are in dual-earner households. For example women living with employed men account for two fifths of NMW recipients and a further third consist of young people still living with their parents. Thus 7-out-of-10 affected by the NMW live in dual-earner households and these households are not normally in the bottom of the family income distribution. Second, such dual-earner households are more likely than other households to have at least one full-time worker. Third, lower income families face higher marginal deduction rates, particularly on housing and council tax benefits.

Thus for working families:

- the fraction gaining is largest at the bottom of the income distribution and declines as we move up the distribution
- among families that gain from the NMW, those towards the bottom of the distribution gain a smaller absolute cash amount than those families with higher incomes, although that lower cash figure may correspond to a higher percentage of the family income

The tax system supplements family income for lower paid workers via tax credits, a form of negative income tax. The working tax credit (WTC) is available to all families with children in which one adult works at least 16 hours a week. There is a premium for those who work at least 30 hours a week. In addition, the child tax credit (CTC) is payable to those with children. It consists of a family element (paid to all those with at least one child and a premium given to those with a child under one year old) and a child element, paid for each child. Additional payments are also available for approved child care costs. The WTC is also available to those without children provided they are over 25 years old and work at least 30 hours a week (see Tsotros 2006 for details).

The WTC and CTC thus provide a minimum weekly income guarantee. Consider single earner families in tax year 2006-07 paid the 2006-07 NMW (£5.35):

Family type	Minimum weekly income guarantee £	Effective net hourly minimum wage £
Family, one child, full time work (35 hours)	268	7.66
Family, one child, part-time work (16 hours)	210	13.12
Single person, no children, aged 25+ (35 hours)	175	5.00
Couple, no children, aged 25+ (35 hours)	206	5.89

These tax credits therefore strengthen the incentive to work for those lower paid families who otherwise may have been better off remaining on benefits. The NMW provides a vital underpinning to this system because, without the NMW, the cost to the Exchequer would be that much higher with the Treasury providing an open-ended subsidy to low wage employers. A 30p increase in the NMW nets the Treasury some £350m, of which a quarter flows through lower WTC and CTC payments.

Table A.1
Households gaining from the NMW across the income distribution

	All households	Working age households with at least one member in employment	
Household income decile	% gaining from 2003 uprating	% gaining from 2003 uprating	cash gain for gainers of notional 25p in NMW in April 2007 £
1	2	3	4
Poorest	6	24	2.50
2	7	25	3.00
3	10	19	3.50
4	11	16	4.00
5	11	13	4.50
6	12	11	5.50
7	9	9	5.00
8	8	7	5.00
9	5	4	5.50
Richest	3	4	5.50
All	9	13	4.50

Notes and sources

1. Columns 2 and 3 refer to 2003 uprating. Calculations by Institute for Fiscal Studies using Family Resources Survey. Alterations in income resulting from offsetting benefit reductions and/or tax increases are taken into account. Source: LPC (2003 p.198).

2. Column 4 is the average cash gain (rounded to nearest 50p), for families that do gain, from a notional 25p increase in NMW in April 2007 (i.e. from £5.35 to a notional £5.60). Alterations in income resulting from offsetting benefit reductions and/or increases are taken into account. Source: HM Treasury (2006b).

Table A.2
Minimum wage rates

	Age 16 - 17		Age 18 – 21 (Youth Development Rate)		Age 22 and over	
	NMW	Change (%)	NMW	Change (%)	NMW	Change (%)
Apr 1999 – May 2000			£3.00		£3.60	
June 2000 – Sept 2000			£3.20	6.7	£3.60	0.0
Oct 2000 – Sept 2001			£3.20	0.0	£3.70	2.8
Oct 2001 – Sept 2002			£3.50	9.4	£4.10	10.8
Oct 2002 – Sept 2003			£3.60	2.9	£4.20	2.4
Oct 2003 – Sept 2004			£3.80	5.6	£4.50	7.1
Oct 2004 – Sept 2005	£3.00		£4.10	7.9	£4.85	7.8
Oct 2005 – Sept 2006	£3.00	0.0	£4.25	3.7	£5.05	4.1
Oct 2006 – Sept 2007	£3.30	10.0	£4.45	4.7	£5.35	5.9
Oct 2007 – Sept 2008	£3.40	3.0	£4.60	3.3	£5.52	3.2

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